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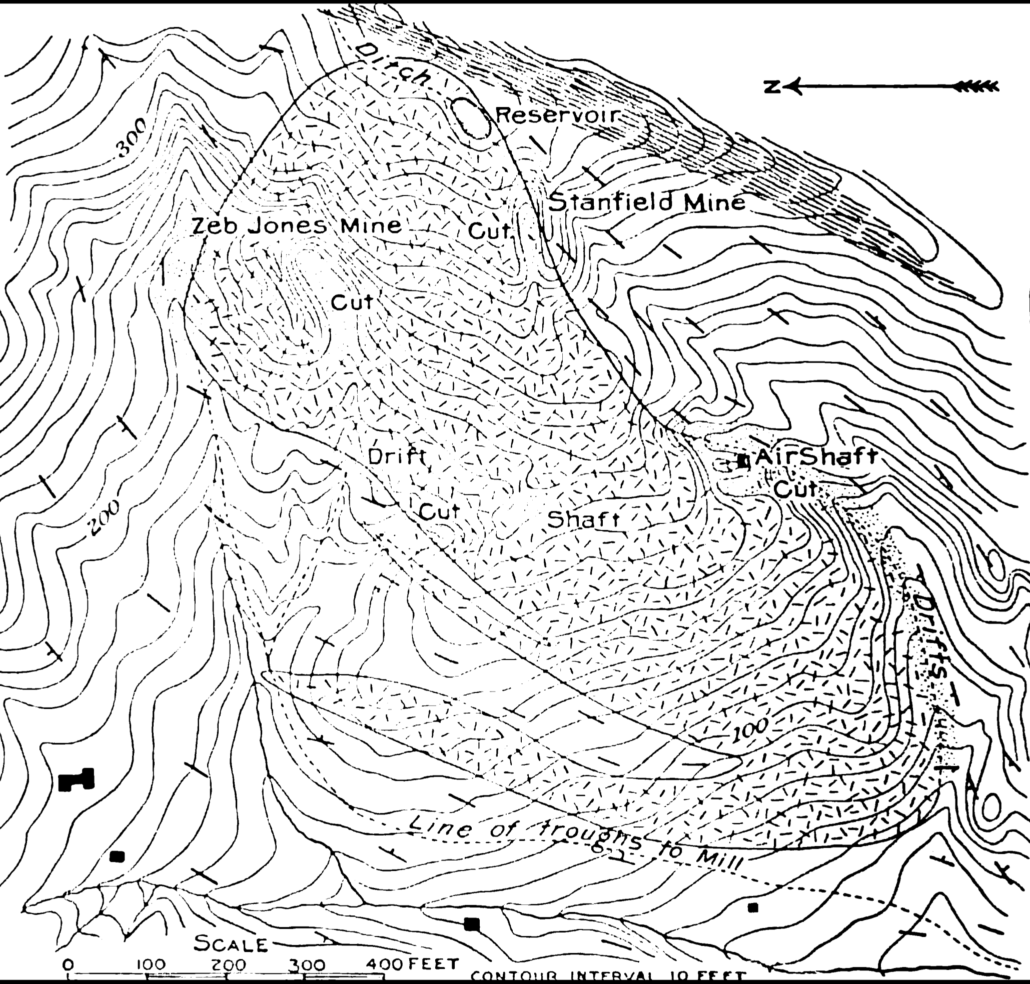

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DEPARTMENT OF THE INTERIOR

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OF THE

UNITED STATES

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No. 178

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1901

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UNITED STATES GEOLOGICAL SURVEY
CHARLES D. WALCOTT, DIRECTOR

THE EL PASO TIN DEPOSITS

BY

WALTER HARVEY WEED

WASHINGTON
GOVERNMENT PRINTING OFFICE
1901

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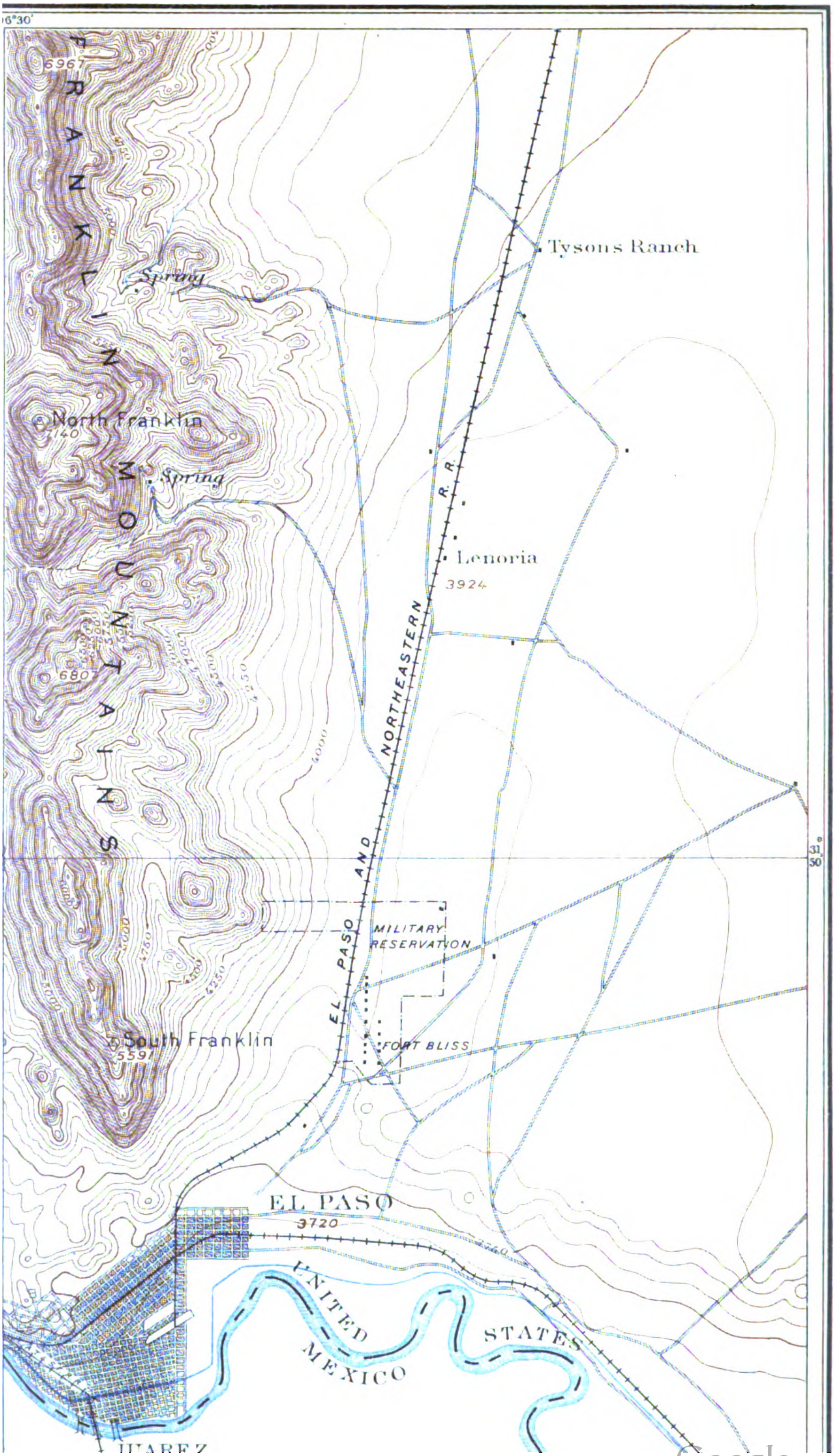
LETTER OF TRANSMITTAL.

Department of the Interior,
United States Geological Survey,
Washington, D. C., March 19, 1901.

Sir: In December, 1900, specimens of tin ore were submitted to the Survey for examination. They proved to contain abundant cassiterite and wolframite in a quartz gangue. They were said to come from the vicinity of El Paso, Texas, and in view of the infrequency of well-authenticated occurrences of tin ore in the United States it was judged wise to have their provenance and manner of occurrence verified at the earliest opportunity. This opportunity presented itself when, in January, 1901, Mr. W. H. Weed had occasion to pass through El Paso, and he was instructed to make a reconnaissance examination of the locality whence the specimens were said to come. The result of his examination is presented briefly in the following report, the immediate publication of which I recommend.

S. F. Emmons,
Geologist in Charge of Section of Metalliferous Ores.

Hon. Charles D. Walcott,
Director of United States Geological Survey.



6°30'
FRANKLIN MOUNTAINS
6967
Spring
North Franklin
7140
Spring
6807
South Franklin
5591
Tysons Ranch
Lenoria
3924
EL PASO AND NORTHEASTERN R.R.
MILITARY RESERVATION
FORT BLISS
EL PASO
3720
UNITED STATES
MEXICO
JUAREZ
31° 50'
4000
4250
4750
5000
3750

THE EL PASO TIN DEPOSITS.

By W. H. Weed.

LOCATION OF DEPOSITS.

The El Paso tin deposits lie on the east flank of the Franklin Mountains, the southern extension of the Organ or San Andreas Range, about 10 miles north of the city of El Paso. The ores were discovered in 1899 and have been prospected by several open cuts and pits, the deepest of which is about 50 feet below the surface. The property belongs to Judge C. R. Moorhead, of El Paso, to whom I am indebted for many courtesies during my visit to the deposits. The place is distant about 14 miles by wagon road from El Paso, 12 miles of excellent road across the flat mesa being succeeded by 2 miles across the foothills. The White Oaks Railroad crosses the flat 3 or 4 miles east of the property, and the main line of the Southern Pacific lies 10 miles to the south. There is a good spring one-fourth of a mile from the ledges, but there is no large supply of water nearer than the Rio Grande. The mesa is underlain by water, the city of El Paso being supplied from driven wells sunk in the mesa gravels. The mesa is scantily grassed and covered with the usual desert vegetation of small yucca and cactus, while the mountain slopes show cedar bushes, with mesquite, yucca, sotol, and other arid-land plants. The mountains show a very regular crest of bedded rocks surmounting smoother basal slopes of a prevailing red-brown color dotted by green sotol bushes.

GEOLOGICAL STRUCTURE AND FORMATIONS.

The geological structure is very simple and is easily made out, as the mountains are not wooded, but show outcropping edges of the upturned limestones and bare slopes of red granite. The mountain range consists of Cambrian and other Paleozoic limestones, upturned by and resting upon an intrusive mass of coarse-grained granite that forms the central core of the range. This granite is well exposed for a distance of 4 or 5 miles along the eastern side of the mountains, forming the lower half of the mountains proper, and in places extending out to the foothills. The crest of the range consists of steeply tilted, heavily bedded, dark-gray limestones dipping westward. The basal quartzites were observed in the drift seen in arroyos, so that the granite is probably intruded between the base of the Cambrian rocks and the underlying Archean complex.

The eastern foothills consist mainly of limestones, but near the tin deposits these bedded rocks have been cut through and granite now forms the surface, remnants of the limestone cover showing as isolated masses capping the hillocks. These relations are shown in the diagram, fig. 1, which is a rough sketch of the range, representing a cross section at the tin mines. North of the place where this section was made a transverse ridge of the range shows the granite to be sheeted by well-marked planes, dipping eastward at an angle of about 45° to 50°. The granite is very much altered by surface decomposition, and crumbles readily to a coarse sand. No fresh material was observed anywhere on the surface, but fairly good material was obtained from the dump heap of the shaft on the north vein. The granite is sheeted near the veins, the planes of sheeting being parallel to the veins themselves. The general sheeting, however, is in a different direction, the average strike being N. 20° E, and the dip 70° SE. A thin section of this granite has been examined under the microscope by Mr. Lindgren, who furnishes the following notes:

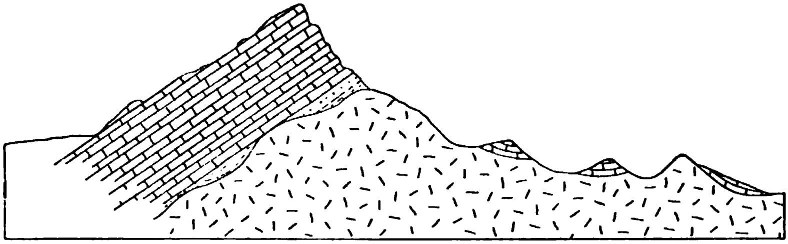


FIG. 1.—Cross section of Franklin Mountains 10 miles north of El Paso, Texas.

> The rock is a coarse-grained normal granite. It shows much anhedral quartz with anhedral feldspar, largely microperthite, with some few grains of microcline. A few small flakes of brownish-green hornblende and some small grains of magnetite were also seen. The rock is a soda granite.

White aplite-granite occurs in veinlets and irregular masses intrusive in the granite, but none was observed close to the veins. The mesa is underlain by cemented gravels, which form also the lower slopes of the foothills.

ORES AND VEINS.

The ores consist of cassiterite, or oxide of tin, with wolframite (tungstate of iron and manganese) in a gangue of quartz. Specimens of nearly pure cassiterite weighing several pounds have been found on the surface, and this mineral occurs in the quartz, either alone or associated with wolframite. The most abundant ore is a granular mixture of tin ore and quartz which resembles a coarse granite and corresponds to the greisen ore of European tin deposits. Pyrite occurs rarely in the eastern exposures of the vein, but appears to constitute the bulk of the metallic contents in exposures seen in the westernmost openings. These ores occur in well-defined veins, which run up the slopes nearly at right angles to the direction of the range, the strike being approximately east-west and the veins dipping steeply to the north. Three veins have been discovered, all of which have been exposed by open-cut work and by pits for several hundred feet in length. The most northerly vein is traceable along the surface for a distance of about 1,200 feet. The middle vein lies about 300 feet south of the east end of the northern one, but apparently converges westward toward the northern vein. The southern vein, which is the smallest of the three, lies about 600 feet farther south.

The veins exhibit the usual characters of the European tin veins, notably those of Cornwall, England, their clearly defined fissures showing a central core or lead of coarse quartz, sometimes containing tin ore, and flanked on either side by altered rock in which the tin ore replaces the feldspar of the granite. Where this metasomatic replacement is complete the ore shows a mixture of cassiterite, with or without wolframite and quartz. Where the replacement is only partial the greisen ore fades off into the unaltered granite. A cross section of the veins shows, therefore, the same phenomena seen at Cornwall. The diagram, fig. 2, shows an ideal representation of the conditions existing in the veins, and has been drawn from sketches made in the field. The central mass of quartz corresponds to the "leader" of the Cornish veins. It is composed of massive, coarsely crystalline quartz, sometimes showing comb structure, and it is clearly the result of the filling of the open fissure by quartz. The adjacent ore-bearing material is a replacement deposit in which the mineral solutions have substituted ore for the feldspar of the granite by metasomatic action; in other words, the main mass of the ore occurs alongside of a quartz vein, and is due to the alteration of the granite forming the walls of the fissure. In general, the ore passes into the granite by insensible transition and there are no distinct walls.

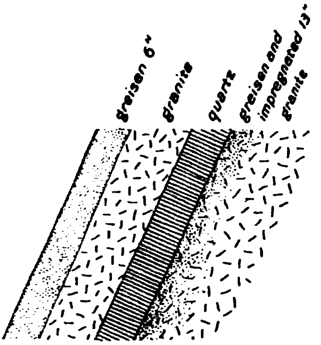


FIG. 2.—Section of tin vein exposed in open cut (north vein).

A thin section of the greisen ore has been examined by Mr. Lindgren, who furnishes the following notes:

The thin section of the tin ore shows it to be a quartz-cassiterite rock. It is a coarsely granular rock consisting of anhedral quartz, with which is intergrown grains of slightly brownish cassiterite. The quartz is full of fluid inclusions and makes up about 75 per cent of the mass. The cassiterite grains are, along the edges, intimately intergrown with quartz. If this is a metasomatic form of the granite a silicification has taken place. The microscope affords no direct evidence, however, that this ore is metasomatic. One small grain of tourmaline and a few flakes of sericite were seen. Neither topaz nor mica occurs in the section, and no remains of feldspar were observed.

The north vein has a course of N. 85½° W. magnetic, as determined from the openings at the east end. At the west end of the workings the course observed, looking back along the outcrop, appears to be N. 80° E. for the northern vein and N. 80° W. for the middle vein; so that if these observations are correct the veins must intersect toward the west. The surveys by the owners of the property show a course N. 85½° W. for the middle and 65° W. for the south vein.

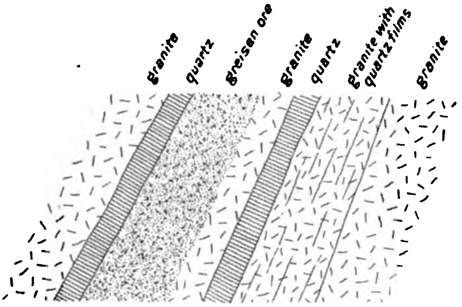


FIG. 3.—Section of north vein (6 feet across).

DEVELOPMENT.

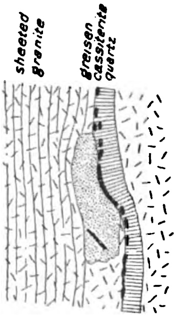


FIG. 4.—Greisen bowlder in tin vein (shaft on middle vein).

A shaft 35 feet deep has been sunk on the north vein at the eastern end of the vein outcrop. This shaft is about 5 by 10 feet across and shows a very well-defined vein about 5 feet wide, having a dip of about 70° to the north. The sides of the shaft show excellent ore, mostly of the greisen variety, extending down for 8 to 15 feet below the top. At this point a slip crosses the shaft and cuts out the ore. This slip, or fault, is a clay seam but one-fourth to one-half inch in thickness, and seems to have thrown the upper part of the vein to the north. The lower half of the shaft reveals only rusty granite, altered and showing films of quartz, but without recognizable ore. A crosscut south from the bottom of the shaft should reach the vein if the fault is a normal one. In the exposure seen in the upper part of the shaft the ore occurs in bunches in altered granite and lies on the north side of a 15-inch streak of sheeted and rusty quartz. A second shaft on the north vein has been sunk at a point about 300 feet west of the one just noted. This shaft is about 25 feet deep. The vein is well exposed at the top, and shows a dip northward, but the shaft passes out of the vein into the sheeted granite, forming the foot wall. A crosscut about 8 feet in length, driven from the bottom of the shaft, cuts the vein, but does not pass through it. The sheeting of the granite seen in this shaft is very pronounced, the rock being divided into plates from one-fourth inch to 12 inches in thickness by planes dipping 61° E. and crossing the vein at 90°. The outcrop of the vein is traceable westward up the slopes by its rusty quartz, and a nearly continuous ledge can be followed. This outcrop has been opened at intervals of a few yards by trenches, which expose the vein and show it to have a thickness of from 2 to 6 feet, with about half this thickness of ore. No samples were, however, taken, and it is uncertain whether the altered granite does not contain a percentage of tin oxide. The most westerly working that could be surely identified as being upon the north vein is a pit 6 feet deep, which shows a 6-foot vein in which the quartz is bluish in color and the tin ore is associated with much pyrite. This point is about 600 or more feet west of the first shaft. West of this point the ledge can not be traced across the slopes, but an opening north a hundred feet higher and a few hundred feet farther west shows a good vein, carrying much pyrite, but devoid of any recognizable tin ore.

The middle vein is developed by a shaft 50 feet deep. which shows a vein having a central leader of quartz 2 feet wide at the top and tapering to 1 foot 4 inches wide at the bottom of the shaft. The dip, as shown by the walls of the shaft, is 70° N. The central quartz mass is spotted with cassiterite, and the altered granite on either side contains recognizable grains of tin oxide.

The south vein lies 500 to 600 feet south of the middle vein. This vein is much narrower than the veins on the north, having an average width of about 1 foot. The strike, as shown near the shaft, is N. 50° W. and the dip 50° N. The vein walls are sometimes defined by a clay selvage one-sixteenth inch wide, but more often show a gradual fading off into the granite.

CONTINUANCE OF VEINS IN DEPTH.

It will be noticed from what has been said that the veins are all well defined at the surface and carry good values in tin ore, but that the ore apparently dies out in depth. Further development is needed to establish the existence of the ore at a greater depth than 50 feet, but it is believed that the veins have been thrown by local slips or faults and will be found by crosscutting from the bottom of the present workings. The character of the fissures and the nature of the ore both indicate that the veins are the result of deep-seated agencies, and are not merely segregations due to descending surface waters. For this reason it is believed that further exploration will develop well-defined tin veins. The absence of topaz in the deposit is noteworthy, for this mineral is commonly associated with cassiterite veins the world over. In other respects the deposits closely resemble the tin veins of Europe, and are clearly due to metasomatic processes. The evidence of a pneumatolitic origin is, however, not conclusive.

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UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

BIBLIOGRAPHY AND CATALOGUE

OF THE

FOSSIL VERTEBRATA OF NORTH AMERICA

BY

OLIVER PERRY HAY

WASHINGTON
GOVERNMENT PRINTING OFFICE
1902

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LETTER OF TRANSMITTAL.

American Museum of Natural History,
New York, May 6, 1901.

Sir: I have the honor to transmit herewith a Bibliography and Catalogue of the Fossil Vertebrata of North America.

I take pleasure in acknowledging the interest which you have shown at all times in the preparation of this work.

I am, with great respect, your obedient servant,

O. P. Hay.

Hon. C. D. Walcott,
Director of the U. S. Geological Survey,
Washington, D. C.

PREFACE.

The purpose of this bibliography and catalogue is to present a list of all the species of fossil vertebrates which have been described, up to the end of the year 1900, from all that part of the continent of North America lying north of Mexico, and to furnish a guide to the literature relating to all these extinct forms of organized beings. The number of species is so great and the literature describing them is so vast and so widely scattered that even the experts in the science of vertebrate paleontology have great difficulty in making and keeping themselves fully informed as to what has already been done and what is being done. It is hoped that this work will relieve students of much tedious and often unavailing search.

This bulletin may be said to consist of three parts: First, a bibliography which contains the titles of all the books, memoirs, and papers, extended or brief, which the author has been able to consult and which have appeared to him to have a useful bearing on the subject; second, a systematically arranged list of all the species of fossil vertebrates which have been described from the region above indicated; third, an index, alphabetically arranged, of all the systematic names occurring in the volume.

In the bibliography there are given about 4,600 titles. Accompanying each is a statement of the number of pages occupied by the work and the number of plates or figures. If the memoir or paper is found in some serial publication, the name of this is given together with the volume and pages. All of the titles have been obtained through actual examination of the scientific journals. In the case of many of these the search has been made page by page, since the indexes are so often deficient that they can not be wholly relied on. The end in view throughout has been to find all that the paleontologist will need in his work and to give correct citations.

The titles of works and papers are given under the names of the authors, and these authors' names are presented in alphabetical order. Each author's papers are arranged in the sequence of the years of publication. Each title is preceded by the author's name, the year of publication, and a letter of the alphabet, A, B, C, etc., according to the number of papers published during that year, as "Leidy, J., 1868 A," "1868 B" to "1868 J." If an author has issued more than 26 papers in any year, the additional papers are indicated by the letters AA, BB, etc. Thus we have "Cope, E. D., 1884 JJ." It must be understood that it is not here implied that the papers of any author in any year have been issued in the order in which they follow each other in this bibliography. In the case of an author who, like Professor Cope, was publishing numerous memoirs, papers, and notes in many journals and Government publications, it is manifestly almost impossible to ascertain the exact order of issue. If any student should be under the necessity of determining such order, he will have to address himself to the task.

How successful the writer has been in collecting a complete list of species only practical use of the book will prove. What has been spoken of above as a list of the known species is, however, far more, for under each species each genus and each group of higher rank represented by any North American fossil species there has been included references to the literature appertaining to it—that is, to put it in another way, each paper and memoir and book cited in the bibliographical portion has been examined, and the proper citations of it have been recorded under the species, genera, etc., of the catalogue of species. An estimate has shown that there are over 40,000 citations recorded. Nevertheless, it is not improbable that some important things have escaped attention.

In the catalogue the writer has not usually cited directly the place of publication of authors' papers, but has referred to them as notated in the bibliography. If, to give an illustration, the student finds under *Ceratops* the citation, "Marsh, O. C., 1888 C, p. 477," he must turn to the list of Professor Marsh's papers for the year 1888 and run down the list to the letter C. He will find there the complete title of that paper, place of publication, etc. This method of citation has been adopted for the following reasons: (1) To economize labor in the preparation of this book. The writer does not feel that it could ever have been completed had he been compelled to cite the journal and volume according to the usual method for all of the approximately 40,000 references herein contained. (2) To bring the size of this bulletin within limits convenient for use. To refer to papers in the usual way, even with intelligible abbreviations, would have increased the size of this volume probably 50 per cent or more. (3) Because the writer believes that, on the whole, the method here employed will save the time of the student. If the place of publication alone is given, no clue whatever is afforded to the nature of the paper. It may or may not contain something of value to him. In this bulletin he has the complete title. If he is studying the dentition of a fossil vertebrate, and the paper which he finds cited deals with the vertebræ, or the carpus, or the habits of the animal in question, he needs to go no further. The time saved in making one trip to a library will compensate for any trouble undergone in turning from the catalogue to the bibliography. This method of reference, with some modifications, is in frequent use by scientific writers, though it has probably not been employed before on so large a scale.

Some further explanation may be made regarding the systematic portion of this work. Under each genus and species there will be found, first of all, a reference to the original description. This is followed by the other citations, arranged according to authors in alphabetic order, years of publication, and symbols. If the author cited has employed a generic or specific name different from the one adopted, this is thrown in parenthetically after the citation.

The writer has arranged the classes, orders, families, and genera of our fossil vertebrates according to what has seemed to him to be their natural relationships. This has appeared to him to be preferable to arranging them all alphabetically, although he does not overlook the advantages of the latter method. On the other hand, the species of each genus is here disposed in alphabetical order for the reason that it will save much time in finding them, while attempts at giving them a natural arrangement are often futile.

As regards nomenclature the writer has followed the rules of the American Ornithological Union, because he believes that they meet the requirements of systematic work more completely and consistently than those adopted by any other body of zoologists.

The coming years will surely witness a great increase in our knowledge of the beings which in past ages have peopled our continent. As a result of discoveries and investigations many new forms will be described, while again perhaps many genera and species which are now accepted will be reduced to synonomy. This will, before many years, make obsolete many of the names here adopted, but it is the purpose of this work to facilitate just such discoveries and investigations and changes.

The writer takes pleasure in expressing his obligations to many friends for assistance and encouragement in prosecuting his work on this volume. Encouragement has been afforded by all, or nearly all, of the vertebrate paleontologists of the United States, and as many as have been applied to have given the information desired. Financial assistance has been given by the Smithsonian Institution, and for this acknowledgments are due, especially to its officers, Secretary S. P. Langley and Assistant Secretary Richard Rathbun; and to Hon. C. D. Walcott, director of the United States Geological Survey. Acknowledgments are due to Dr. Theodore Gill for advice with regard to matters pertaining to nomenclature, to scientific literature, and to classification. It must not, however, be inferred that he is responsible for any innovations that have been made. Dr. Leonhard Stejneger, curator of the department of reptiles, United States National Museum, has answered many questions with regard to nomenclature and has given assistance in other ways. The classification of the birds here adopted is, with slight modification, that proposed by him in the Standard Natural History, 1885. Prof. Frederick A. Lucas, assistant curator of the department of comparative anatomy, United States National Museum, has been helpful in many ways, and to him is due the final disposition of certain of the genera and species.

AMERICAN MUSEUM OF NATURAL HISTORY,
New York, May 1, 1901.

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By Oliver Perry Hay.

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—— 1896 A

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—— 1896 B

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—— 1897 A

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Tome i: pp. i-xxxii; 1-188; atlas of 11 pls. (A-K.)

Tome ii: pp. i-xii; pt. 1, 1-310; pt. 2, 1-144; atlas of 146 pls.

Tome iii: pp. i-viii; 1-390; 1-32; atlas of 83 pls.

Tome iv: pp. i-xvi; 1-292; 1-22; atlas of 61 pls.

Tome v: pp. i-xii; 1-160; 1-144; atlas of 95 pls.

This work was issued in livraisons at various times from 1833 to 1844. The dates of publication of the livraisons and of the plates are given in Woodward and Sherborn's Catalogue of British Fossil Vertebrates, pp. xxv-xxix.

Under the genera and species of the present work the actual date of publication, if not 1843, is generally given in parentheses after "1843 B."

—— 1844 A

Synoptical table of British fossil fishes, arranged in the order of the geological formations.

Report Brit. Assoc. Adv. Sci., 13th meeting, Cork, 1843, pp. 194-207.

—— 1844 B

Monographie des poissons fossiles du vieux grès rouge ou système Dévonien (Old Red sandstone) des Isles Britanniques et de Russie.

Pp. i-xxxvi; 1-171, with pls. A-I; i-xxxiii, Neuchatel (Suisse).

—— 1845 A

Report on the fossil fishes of the London clay.

Report Brit. Assoc. Adv. Sci., 14th meeting, York, 1844, pp. 279-310.

—— 1846 A

On the ichthyological fossil fauna of the Old Red sandstone.

Edinb. New Philos. Jour., xli, pp. 17-49.

From Monographie des poissons foss. du vieux grès rouge.

—— 1848 A

[Letter to Dr. Gibbes regarding *Dorudon*.]

Proc. Acad. Nat. Sci. Phila., iv, p. 4.

—— 1849 A

[Remarks on crocodiles of the Green sand of New Jersey and on *Atlantochelys*.]

Proc. Acad. Nat. Sci. Phila., iv, p. 169.

Contains no descriptions.

Agassiz, Louis—Continued. 1850 A

On the fossil remains of an elephant found in Vermont.

Proc. Amer. Assoc. Adv. Sci., 2d meeting, Cambridge, Mass., pp. 100-101.

Said by Professor Agassiz to be found for the first time in this country.

—— 1850 B

Remarks on finding femur of *Atlantochelys*.

Proc. Nat. Hist. Soc. Boston, iii, p. 351.

No adequate description and no specific name.

—— 1851 A

[Announcement of the finding of the head of a walrus on New Jersey shore.]

Proc. Amer. Assoc. Adv. Sci., 4th meeting, New Haven, 1850, p. 252.

—— 1851 B

Report on the vertebrate fossils exhibited to the Association (abstract).

Proc. Amer. Assoc. Adv. Sci., 5th meeting, Washington, D. C., 1851, pp. 178-180.

—— 1853 A

Notice of Joseph Leidy's "Memoir of the extinct species of American ox."

Amer. Jour. Sci. (2), xvi, p. 281.

—— 1856 A

Notice of the fossil fishes found in California by W. P. Blake.

Amer. Jour. Sci. (2), xxi, pp. 272-275.

Describes 11 new species of Elasmobranchs. The same species were described and figured in Pacific Survey Report, v, pp. 313-316, pl. i.

—— 1857 A

Notice of the fossil fishes.

Pacific Survey Report, v, pp. 313-316, with pl. 1.

Contains descriptions and figures of 11 new species of Elasmobranchs.

—— 1857 B

Contributions to the natural history of the United States of America. Vol. i, pt. ii, North American *Testudinata*.

Pp. 235-452d, with pls. i-xxvii.

The plates are found in vol. ii. This volume is devoted mostly to the embryology of the *Testudinata*.

—— 1862 A

Highly interesting discovery of new sauroid remains.

Amer. Jour. Sci. (2), xxxiii, p. 138.

Refers to the discovery of *Eosaurus* by O. C. Marsh; no name yet proposed.

Agassiz, Louis—Continued. 1862 B

Mastodon tooth in Amador County, Cal.

Amer. Jour. Sci. (2), xxxiv, p. 135.

Editorial note supposed to have been written by Agassiz.

—— 1862 C

Remarks on the megatheroids.

Proc. Nat. Hist. Soc. Boston, ix, pp. 101-102.

—— 1863 A

Note on the megatherium.

Amer. Jour. Sci. (2), xxxvi, p. 300.

—— 1863 B

[Remarks on *Megatherium.*]

Proc. Nat. Hist. Soc. Boston, ix, p. 193.

Ahlborn, Fr. 1896 A

Zur Mechanik des Vogelfluges.

Abhandl. Naturwiss. Verein Hamburg, xiv, pp. 7-134, with 54 figs. in the text.

Albrecht, Paul. 1879 A

Ueber den Stammbaum der Raubthiere.

Schriften d. phys.-ökon. Gesellsch. Konigsberg, xx, Bericht, pp. 22-23.

Presents an arrangement of the families of the *Carnivora.*

—— 1886 A

Über die cetoide Natur der *Promammalia.*

Anatomischer Anzeiger, i, pp. 338-350.

Alessandri, G. De. 1896 A

Avanzi di *Oxyrhina hastalis* del miocene di Alba.

Atti Soc. Ital. Sci. Nat., Milano, xxxvi, pp. 263-269, with pl. i.

Alezais, Henri. 1898 A

Étude anatomique du cobaye (*Cavia cobaya*).

Jour. l'Anat., Physiol. norm. et patholog., xxxiv, pp. 735-756, with 5 text figs.

—— 1899 A

Étude anatomique du cobaye (*Cavia cobaya*).

Jour. l'Anat. Physiol., norm. et patholog., xxxv, pp. 333-381.

Allen, Harrison. 1880 A

On some homologies in bunodont dentition.

Proc Acad. Nat. Sci., Phila., pp. 226-228.

—— 1882 A

On a revision of the ethmoid bone in the *Mammalia,* with special reference to the description of this bone and of the sense of smelling in the *Cheiroptera.*

Bull. Mus. Comp. Zool., x, pp. 135-164, with pls. i-vii.

Allen, Harrison—Continued. 1886 A

On the tarsus of bats.

Amer. Naturalist, vol. xx, pp. 175-176, with 6 illus.

—— 1886 B

On the types of tooth structure in *Mammalia.*

Amer. Naturalist, xx, pp. 295-297.

—— 1888 A

The occipito-temporal region in the crania of *Carnivora.*

Science, xi, p. 71.

—— 1889 A

Remarks on the pronghorn (*Antilocapra americana*).

Proc. Amer. Philos. Soc., xxvi, pp. 366-367.

—— 1891 A

Prof. Joseph Leidy: His labors in the field of vertebrate anatomy.

Science, xviii, pp. 274-276.

—— 1893 A

A monograph of the bats of North America.

Bull. U. S. Nat. Mus. No. 43, pp. 198, 38 pls. Washington, D. C., 1893.

Allen, Joel Asaph. 1876 A

Description of some remains of an extinct species of wolf, and an extinct species of deer from the lead region of the Upper Mississippi.

Amer. Jour. Sci. (3), xi, pp. 47-51.

—— 1876 B

The American bisons, living and extinct.

Mem. Kentucky Geol. Surv., i pt. ii, pp. i-ix; 1-246, with pls. i-xii.

Mem. Mus. Comp. Zool., iv, No. 10, pp. i-ix; 1-246, with pls. i-xii and map.

—— 1876 C

Geographical variation among North American mammals, especially with respect to size.

Bull. U. S. Geol. and Geog. Surv. Terr., ii, pp. 309-344.

—— 1877 A

Monographs of North American *Rodentia.*

Report U. S. Geol. Surv. Terr., F. V. Hayden, U. S. geologist in charge, vol. xi.

No. ii, *Leporidæ,* pp. 265-378; No. iii, *Hystricidæ,* pp. 379-398; No. iv, *Lagomyidæ,* pp. 399-414; No. v, *Castoroididæ,* pp. 415-426; No. vi, *Castoridæ,* pp. 427-454; No. xi, *Sciuridæ,* pp. 631-940.

Allen, Joel Asaph—Continued. 1877 B

Synoptical list of the extinct *Rodentia* of North America.

Report U. S. Geol. Surv. Terr., F. V. Hayden, U. S. geologist in charge, vol. xi, pp. 943–949.

This list forms a portion of the volume containing J. A. Allen's and E. Coues's monographs of N. A. *Rodentia*.

In this list most of the species are mentioned without comment.

—— 1878 A

Description of a fossil passerine bird from the insect-bearing shales of Colorado.

Bull. U. S. Geol. and Geog. Surv. Terr., 1878 iv, pp. 443–445, with pl. i.

See also Nature, vol. xviii, pp. 204–205; Amer. Jour. Sci., 1878, xv, p. 381.

Describes *Palæospiza bella*.

—— 1879 A

On the species of the genus *Bassaris*.

Bull. U. S. Geol. and Geog. Surv. Terr., v, pp. 331–340.

Presents the synonomy and the literature bearing on this genus and its species.

—— 1880 A

History of North American Pinnipeds; a monograph of the walruses, sea lions, sea bears, and seals of North America.

Pp. i–v; 1–785, with 60 figs. in the text. Washington, 1880.

—— 1881 A

Preliminary list of works and papers relating to the mammalian orders *Cete* and *Sirenia*.

Bull. U. S. Geol. and Geog. Surv. Terr., vi, pp. 399–562.

—— 1885 A

On an extinct type of dog from Ely Cave, Lee County, Virginia.

Mem. Mus. Comp. Zool., x, No. 2, pp. 1–8, with pls. i–iii.

Describes *Pachycyon robustus*, Allen. This paper is followed (pp. 8–13) by one by N. S. Shaler on the age of the cave.

—— 1887 A

Note on Squalodont remains from Charleston, S. C.

Bull. Amer. Mus. Nat. Hist., ii, pp. 35–39, with pls. v, vi.

Describes *Squaladon tiedemani*, sp. nov.

—— 1893 A

Descriptions of four new species of *Thomomys*, with remarks on other species of the genus.

Bull. Amer. Mus. Nat. Hist., v. pp. 47–68, with pl. i.

Allen, Joel Asaph—Continued. 1900 A

The North American jumping mice.

Amer. Naturalist, xxxiv, pp. 199–202.

Allen, John H. 1846 A

Some facts respecting the geology of Tampa Bay.

Amer. Jour. Sci. (2), i, pp. 38–42.

Allis, Edward P. 1889 A

The anatomy and development of the lateral line system in *Amia calva*.

Jour. Morphology, ii, pp. 463–540, with pls. xxx–xlii.

—— 1899 A

On certain homologies of the squamosal, intercalar, exoccipital, and extrascapular bones of *Amia calva*.

Anatom. Anzeiger, xvi, pp. 49–72.

Appended is a list of 36 papers bearing on the subject.

—— 1899 B

A reply to certain of Cole's criticisms of my work on *Amia calva*.

Anatom. Anzeiger, xv, pp. 364–379.

—— 1900 A

The premaxillary and maxillary bones and the maxillary and mandibular breathing valves of *Polypterus bichir*.

Anatom. Anzeiger, xviii, pp. 257–289, with 3 figs. in the text.

Alston, Edward R. 1876 A

On the classification of the order *Glires*.

Proc. Zool. Soc., Lond., 1876, pp. 61–98, with pl. iv and 5 figs. in the text.

Alth, Alois v. 1874 A

Ueber die palæozoischen Gebilde Podoliens und deren Versteinerungen.

Abhandl. k. k. geolog. Reichsanstalt, Wien, vii, pp. 1–77, pls. i–iv.

Cephalaspis, *Pteraspis*, *Cyathaspis*, and *Coccosteus*.

—— 1886 A

Ueber die Zusammengehörigkeit der den Fischgattungen *Pteraspis*, *Cyathaspis*, und *Scaphaspis* zugeschriebenen Schilder.

Beiträge zur Paläont. Österreich-Ungarns und des Orients, v. Heft. iii, pp. 61–73, with pl. xxiv.

Ameghino, Florentino. 1883 A

Sobre la necesidad de borrar el género *Schistopleurum* y sobre la clasificacion y sinonimia de los Glyptodontes en general.

Bol. Acad. Nac. Ciencias, Córdoba, Argentina, v, pp. 1–34.

Ameghino, Florentino—Cont'd. 1886 A

Contribuciones al conocimiento de los mamíferos fósiles de los terrenos terciarios antiguos del Paraná.

Bol. Acad. Nac. Ciencias, Córdoba, Argentina, ix, pp. 1-228.

—— 1889 A

Contribucion al conocimiento de los mamíferos fósiles de la República Argentina, obra escrita bajo los auspicios de la Academia Nacional de Ciencias de la República Argentina para presentarla á la Exposicion Universal de Paris de 1889.

Buenos Aires, 1889. Folio, pp. i-xxxiii; 1-1027, with atlas of pls. i-xcviii.

—— 1891 A

Observaciones criticas sobre los caballos fósiles de la República Argentina.

Revista Argentina de Historia Natural, i, pp. 4-17; 65-88.

—— 1891 B

Los Plagiaulacídeos argentinos y sus relaciones zoológicas, geológicas y geográficas.

Revista Argentina de Historia Natural, i, pp. 38-44.

—— 1891 C

Adicion á la memoria del Dr. H. von Ihering sobre la distribucion geográfica de los Creodontes.

Revista Argentina de Historia Natural, i, pp. 214-219.

—— 1891 D

Determinacion de algunos jalones para la restauracion de las antiguas conexiones del continente Sud-americano.

Revista Argentina de Historia Natural, i, pp. 282-288.

—— 1892 A

Répliques aux critiques du Dr. Burmeister sur quelques genres de mammifères fossiles de la République Argentine.

Bol. Acad. Nac. Ciencias, Córdoba, xii, pp. 437-469; also as separate with pp. 3-35.

—— 1894 A

Enumération synoptique des espèces mammifères fossiles des formations éocènes de Patagonie.

Bol. Acad. Nac. Ciencias, Córdoba, xiii, pp. 259-452, with 66 figs. in the text.

Ameghino, Florentino—Cont'd. 1896 A

Sur l'évolution des dents des mammifères.

Bol. Acad. Nac. Ciencias, Córdoba, Argentina, xiv, pp. 381-517.

—— 1897 A

Mammifères crétacés de l'Argentine. Deuxième contribution à la connaissance de la faune mammalogique des couches à Pyrotherium.

Bol. Institut Geogr. Argentino, xviii, pp. 1-117, with 86 figs. in the text.

Many new genera and species described. Contains brief references to papers by Prof. O. C. Marsh and Dr. J. L. Wortman on the *Tæniodontia*. Reviewed by M. Schlosser in Neues Jahrb. Min., 1900, ii, pp. 296-306.

—— 1898 A

An existing ground-sloth in Patagonia.

Natural Science, xiii, pp. 324-326.

A translation of the original paper, which was published in La Plata, Argentina, 1898.

—— 1898 B

Sur l'évolution des dents des mammifères.

Bull. Soc. Géol. France (3), xxvi, pp. 497-499

—— 1899 A

On the primitive type of the plexodont molars of mammals.

Proc. Zool. Soc. Lond., 1899, pp. 555-571, with 16 figs. in the text.

—— See also **Gervais** and **Ameghino.**

American Geologist. 1888 A

[Editorial notice of a paper by Dr. Traquair on fossil fishes printed in Geological Magazine for May, 1888.]

Amer. Geologist, ii, p. 133.

—— 1891 A

New discoveries by Dr. Clarke in the fish beds of the Devonian.

Amer. Geologist, vii, pp. 143-144.

From reports of meeting of Amer. Assoc. Adv. Sci.

—— 1891 B

The oldest fish remains known.

Amer. Geologist, vii, pp. 329-330.

Editorial comment on discoveries in Colorado by C. D. Walcott.

—— 1891 C

Discovery of mastodon remains in the Shenandoah Valley.

Amer. Geologist, vii, p. 335.

Editorial note regarding finding of bones of the mastodon in Rockingham County, Va.

American Geologist—Cont'd. 1891 D

[Editorial comment on Dr. G. Baur's "Remarks on the reptiles generally called *Dinosauria*," published in Amer. Naturalist, xxv, pp. 434–454.]

Amer. Geologist, viii, pp. 55-56.

—— 1891 E

Supposed Trenton fossil fish.

Amer. Geologist, viii, pp. 178-180.

Editorial comment on C. D. Walcott's Lower Silurian fishes.

—— 1891 F

Man and the mammoth.

Amer. Geologist, viii, pp. 180-183.

Editorial comment on paper by M. Max. Lohest presented before the International Geological Congress at Belgium.

—— 1891 G

"Personal and scientific news."

Amer. Geologist, viii, pp. 191, 198.

Notes on the finding of various vertebrates in Florida by Dr. J. Kost, and of *Megalonyx* in Tennessee by Professor Safford.

—— 1892 A

Prehistoric horses.

Amer. Geologist, ix, pp. 67-68.

Editorial comment on Professor Cope's paper in Amer. Naturalist for October, 1891.

American Journal of Science. 1828 A

Teeth of the mastodon.

Amer. Jour. Sci. (1), xiv, pp. 187-188.

A notice, taken from the New York Times, regarding the finding of teeth of mastodon at Sharon, Conn.

—— 1835 A

Vertebral bone of a mastodon.

Amer. Jour. Sci., xxvii, pp. 165-166.

Found in Connecticut.

—— 1845 A

Large skeleton of the *Zeuglodon* of Alabama.

Amer. Jour. Sci., xlix, p. 218.

Extract from Mobile Daily Advertiser of May 23, 1845. Refers to skeleton found by Dr. Koch.

—— 1845 B

Fossil footmarks found in strata of the Carboniferous series in Westmoreland County, Pa.

Amer. Jour. Sci., xlviii, pp. 217-218.

—— 1845 C

Remarks [on paper by A. T. King].

Amer. Jour. Sci., xlviii, p. 343.

See King, A. T. 1845 A.

—— 1846 A

The mastodon of Newburgh, N. Y., discovered in August, 1845.

Amer. Jour. Sci. (2), i, pp. 268-270.

American Journal of Science—Continued. 1846 B

Mastodon giganteus.

Amer. Jour. Sci. (2), ii, pp. 131-133, with 1 fig. in text.

An unsigned editorial.

—— 1847 A

Harlanus, a new genus of fossil pachyderms.

Amer. Jour. Sci. (2), iii, p. 125.

Editorial note on paper by R. Owen, in Proc. Acad. Phila., iii, pp. 93-96. 1846. (Owen, R. 1846 A.)

—— 1847 B

Ornithichnites.

Amer. Jour. Sci. (2), iii, p. 276.

—— 1852 A

The *Mastodon giganteus* of North America, by John C. Warren, M. D.

Amer. Jour. Sci. (2), xiv, p. 454.

An editorial notice of Dr. Warren's book.

—— 1852 B

On a fossil saurian of the New Red sandstone formation of Pennsylvania, with some account of that formation, etc., by Isaac Lea.

Amer. Jour. Sci. (2), xiv, p. 451.

Editorial notice of Lea's paper in Jour. Acad. Nat. Sci. Phila. (2), ii, pt. 3.

—— 1853 A

Notice of the "*Mastodon giganteus*" of Dr. J. C. Warren.

Amer. Jour. Sci., xv, pp. 367-378.

An editorial notice of Dr. Warren's work on the mastodon.

—— 1853 B

Fossil elephant.

Amer. Jour. Sci. (2), xv, p. 146.

Editorial note on occurrence of fossil elephant at Zanesville, Ohio.

—— 1871 A

Notice of Cope's "Synopsis of the extinct *Batrachia* and *Reptilia* of North America."

Amer. Jour. Sci. (3), i, pp. 220-221.

—— 1872 A

On two new Ornithosaurians from Kansas, by Edward D. Cope.

Amer. Jour. Sci. (3), iii, pp. 374-375.

Editorial notice of Cope's paper with above title, in Amer. Phil. Soc., xii, p. 420.

—— 1873 A

[Editorial remarks on Professor Cope's "Note on the Cretaceous of Wyoming," said to be published in Proc. Phil. Soc. Phila.]

Amer. Jour. Sci. (3), v, p. 231.

American Journal of Science—Continued. 1875 A

A new mastodon.

Amer. Jour. Sci. (3), ix, p. 222.

Editorial notice of announcement by Professor Cope.

—— 1876 A

Fifth annual report of the Geological Survey of Indiana, made during the year 1873.

Amer. Jour. Sci. (5), xii, p. 307.

Editorial notice.

—— 1882 A

Mastodons in New Jersey.

Amer. Jour. Sci. (3), xxiv, pp. 294–295.

Editorial notice of paper by Professor Lockwood.

American Naturalist. 1869 A

The egg of the great auk.

Amer. Naturalist, iii, p. 550.

A note without signature.

—— 1871 A

Fossil whale in the Drift.

Amer. Naturalist, v. p. 125.

Extract from Nature.

—— 1871 B

Fossil walrus.

Amer. Naturalist, v, p. 316.

Notice of exhibition of skull of walrus by Professor Newberry.

Ami, Henry M. 1891 A

On some extinct *Vertebrata* from the Miocene rocks of the north-west territories of Canada recently described by by Professor Cope.

Science, xviii, p. 53.

See also Ottawa Naturalist, v, pp. 74–77, for abstract.

—— 1898 A

The mastodon in western Ohio.

Science (n. s.), vii, p. 80.

Ammon, Ludwig v. 1885 A

Ueber *Homœosaurus maximiliani.*

Abhandl. math.-phys. Classe k. bayerischen Akad. Wissensch., xv, pp. 499–528, with pls. i, ii.

—— 1896 A

Ueber neue Stücke von *Ischyodus.*

Berichte naturw. Vereins Regensburg, 1894–95, Heft v, pp. 252–263, with pls. v, vi.

Anderson, John. 1860 A

On Dura Den sandstone.

Report Brit. Assoc. Adv. Sci., 29th meeting, Aberdeen, 1859, p. 97.

—— 1861 A

Report on the excavations in Dura Den.

Report Brit. Assoc. Adv. Sci., 30th meeting, 1860, pp. 32–34.

Treats of *Holoptychius*, etc.

Andreæ, A. 1893 A

Acrosaurus frischmanni H. v. Meyer. Ein dem Wasserleben angepasster Rhynchocephale von Solenhofen.

Bericht Senckenb. naturforsch. Gesellsch., 1893, pp. 21–34, with pls. i, ii.

—— 1893 B

Vorläufige Mittheilung über die Ganoiden (*Lepidosteus* und *Amia*) des Mainzer Beckens.

Verhandl. naturhist.-medicin. Vereins Heidelberg, (n. s.), v, pp. 7–15, with 2 text figs.

Contains remarks on North American genera *Lepidosteus, Clastes, Amia, Pappichthys.*

Andrews, Charles W. 1895 A

Note on a specimen of *Keraterpeton galvani* Huxley, from Staffordshire.

Geol. Mag. London (4), ii, pp. 81–84, with 1 text fig.

—— 1895 B

Note on a skeleton of a young plesiosaur from the Oxford clay of Peterborough.

Geol. Mag. London (4), ii, pp. 241–243, with pl. ix and 1 text fig.

—— 1895 C

On the development of the shoulder-girdle of a plesiosaur (*Cryptoclidus oxoniensis*, Phillips sp.), from the Oxford clay.

Ann. and Mag. Nat. Hist. (6), xv, pp. 333–346, with 4 woodcuts in the text.

—— 1895 D

On the structure of the skull in *Peloneustes philarchus*, a pliosaur from the Oxford clay.

Ann. and Mag. Nat. Hist. (6), xvi, pp. 242–256, with pl. xiii and 3 figs. in the text.

—— 1895 E

The pectoral and pelvic girdles of *Muræenosaurus plicatus.*

Ann. and Mag. Nat. Hist. (6), xvi, pp. 429–434, with 3 figs. in the text.

—— 1896 A

On the structure of the plesiosaurian skull.

Quart. Jour. Geol. Soc., lii, pp. 246–252, with pl. ix and 2 figs. in the text.

—— 1897 A

Note on the cast of the brain cavity of *Iguanodon.*

Ann. and Mag. Nat. Hist. (6), xix, pp. 585–591, with pl. xvi and 1 text fig.

Andrews, Edmund. 1875 A

Dr. Koch and the Missouri mastodon.

Amer. Jour. Sci. (3), x, pp. 32–34.

Annan, Robert. 1793 A

Account of a large animal found near Hudson River.

Memoirs Amer. Acad. Arts and Sci. (1), ii, pp. 160–164.

Describes what appears to have been the skeleton of a mastodon.

Anonymous. 1834 A

Teeth of the elephant and mastodon.

Amer. Jour. Sci., xxv, pp. 257–258.

Found in Ohio.

—— 1837 A

Fossil remains of the elephant, *Elephas primigenius*.

Amer. Jour. Sci., xxxii, pp. 377–379.

Atthey, Thomas. 1868 A

Notes on various species of *Ctenodus*, obtained from the shales of the Northumberland coal field.

Ann. and Mag. Nat. Hist. (4), vol. i, pp. 77–87.

Also in Nat. Hist. Trans. Northumberland and Durham, iii, 1868, pp. 54–66, pls. i–iii. Here the paper is credited to Hancock and Atthey.

—— 1868 B

On the occurrence of palatal teeth belonging to the genus *Climaxodus* M'Coy in the Low Main shale of Newsham.

Ann. and Mag. Nat. Hist. (4), ii, pp. 321–323.

Also in Nat. Hist. Trans. Northumberland and Durham, iii, 1868, pp. 306–309.

—— 1875 A

On the articular bone and supposed vomerine teeth of *Ctenodus obliquus*, and on *Palæoniscus hancocki*, n. sp., from the Low Main, Newsham, Northumberland.

Ann. and Mag. Nat. Hist. (4), vol. xv, pp. 309–312, pl. xix.

—— 1876 A

On *Anthracosaurus russelli* (Huxley).

Ann. and Mag. Nat. Hist. (4), xviii, pp. 146–167, with pls. viii–xi.

—— 1877 A

Notes on a paper by R. H. Traquair, M. D., F. G. S., F. R. S., on the structure of the lower jaw in *Rhizodopsis* and *Rhizodus*.

Ann. and Mag. Nat. Hist. (4), vol. xx, pp. 129–130.

See reply to this on p. 244, same volume.

—— See also **Hancock** and **Atthey.**

Atwater, Caleb. 1820 A

On some ancient human bones, etc., with a notice of the bones of the mastodon or mammoth, and of various shells found in Ohio and the West.

Amer. Jour. Sci. (1), ii, pp. 242–246, with pl. ii.

Auld, Robert C. 1892 A

As to the "extinction" of the American horse.

Science, xx, p. 135.

Ayres, Howard. 1893 A

On the genera of the *Dipnoi dipneumones*.

Amer. Naturalist, xxvii, pp. 919–932.

Baer, K. E. von. 1840 A

Untersuchungen über die ehemalige Verbreitung und gänzliche Vertilgung der von Steller beobachteten nordischen Seekuh (*Rytina*, Ill.).

Mém. Acad. Imp. Sci., St.-Pétersbourg (6), Sci. Nat., iii., pp. 53–80.

—— 1866 A

Neue Auffindung eines vollständigen Mammuths mit der Haut und den Weichtheilen, im Eisboden Sibiriens, in der Nähe der Bucht des Tas.

Mélanges biolog. Bull. Acad. Imp. Sci. St. Pétersb., v, pp. 644–740, with 1 pl.

—— 1867 A

Fortsetzung der Berichte über die Expedition zur Aufsuchung des angekündigten Mammuths.

Mélanges biolog. Bull. Acad. Imp. Sci. St. Pétersb., v, pp. 42–72, with pl.

Baikie, Balfour. 1857 A

On the skull of a manatus from Western Africa.

Proc. Zool. Soc. London, 1857, pp. 29–33, pl. ii.

Baird, Spencer F. 1850 A

On the bone caves of Pennsylvania.

Proc. Amer. Assoc. Adv. Sci., 2d meeting, Cambridge, 1849, pp. 352–355.

—— 1857 A

Mammals of North America; the descriptions of species based chiefly on the collection in the museum of the Smithsonian Institution, with 87 pls. of original figs., all illustrating the genera and species and including details of external appearance and osteology.

Philadelphia, 1859, 4to: pp. i–xxxiv; 1–764, with pls. i–lxxxvii, and a number of text figs.

Balfour, F. M. 1881 A

On the development of the skeleton of the paired fins of *Elasmobranchii*, considered in relation to its bearings on the nature of the limbs of the *Vertebrata*.

Proc. Zool. Soc. London, 1881, pp. 662–671, with pls. lvii and lviii and 2 woodcuts in the text.

Balfour, F. M.—Continued. 1882 A

On the structure and development of *Lepidosteus*.

Philos. Trans. Roy. Soc. London, clxxiii, pp. 359–442, pls. 21–29.

Barbour, Edwin H. 1890 A

Remains of the primitive elephant found in Grinnell, Iowa.

Science, xvi, p. 263.

—— 1890 B

Notes on the palæontological laboratory of the United States Geological Survey under Professor Marsh.

Amer. Naturalist, xxiv, pp. 388–400, with 8 woodcuts in the text.

Barkas, T. P. 1868 A

On *Climaxodus*, or *Pœcilodus*; a palatal tooth from the Low Main coal-shale, Northumberland.

Geol. Magazine (1), v, pp. 495–497.

—— 1868 B

On the genus *Diplodus*.

Geol. Magazine (1), v, pp. 580–581.

—— 1873 A

Illustrated guide to the fish, amphibian, reptilian, and supposed mammalian remains of the Northumberland Carboniferous strata.

London, 1873, 8vo., pp. i–viii, 9–117, with a folio atlas of 10 pls. containing 248 figs.

—— 1881 A

Ctenoptychius, or Kammplatten.

Ann. and Mag. Nat. Hist. (5), viii, pp. 350–354.

Barkas, W. J. 1874 A

On the microscopical structure of fossil teeth from the Northumberland Coal Measures.

Monthly Review of Dental Surgery, ii, pp. 297–300, 344–349, 386–393, 438–445, 482–488, 533–539, with figs. i–xxxii.

—— 1877 A

On the genus *Ctenodus*.

Jour. and Proc. Roy. Soc. N. S. Wales, x, pp. 99–123, with pls. i–v.

Part I. On the genus *Ctenodus*, a fish found in the true Coal Measures of Great Britain [pp. 99–109]. Part II. On the microscopic structure of the mandibular and palatal teeth of *Ctenodus* [pp. 110–115]. Part III. On the vomerine teeth of *Ctenodus* [pp. 115–120]. Part IV. On the dentary, articular, and pterygopalatine bones of *Ctenodus* [pp. 120–123].

—— 1878 A

On the genus *Ctenodus*.

Jour. and Proc. Roy. Soc. N. S. Wales, xi, pp. 51–64.

Part V. On the sphenoid cranial bones, operculum, and supposed ear bones of *Ctenodus* [pp. 51–57]. Part VI. On the scapula?, coracoid, ribs, and scales of *Ctenodus* [pp. 58–64].

Barkas, W. J.—Continued. 1878 B

Ctenacanthus, a spine of *Hybodus*.

Jour. and Proc. Roy. Soc. N. S. Wales, xi, pp. 145–155.

—— 1878 C

On a dental peculiarity of the *Lepidosteidæ*.

Jour. and Proc. Roy. Soc. N. S. Wales, x, pp. 203–207.

Barnston, George. 1863 A

Remarks on the genus *Lutra*, and on the species inhabiting America.

Canadian Nat. and Geol. (1), viii, pp. 147–158, with 6 figs. in the text.

Barrett, L. 1859 A

On the atlas and axis of the *Plesiosaurus*.

Report Brit. Assoc. Adv. Sci., 28th meeting, Leeds, 1858, pp. 78–80.

Bartlett, John. 1846 A

Letter regarding the finding of zeuglodon bones at Natchez, Miss.

Proc. Nat. Hist. Soc. Boston, ii, p. 96.

Barton, Benjamin Smith. 1805 A

Letter to M. Lacépède, of Paris, on the natural history of America.

Tilloch's Philos. Mag., xii, pp. 97–103; 204–211.

Bassani, Francesco. 1899 A

La ittiofauna del calcare eocenico di Gassino in Piemonte.

Atti Accad. Sci. Fis. e Mat. Napoli (2), ix, No. 13, pp. 1–41, with pls. i–iii.

Bate, C. Spence. 1867 A

On the dentition of the common mole (*Talpa europæa*).

Ann. and Mag. Nat. Hist. (3), xix, pp. 377–381, with pl. xi.

Baudelot, E. 1873 A

Recherches sur la structure et le développement des écailles des poissons osseux.

Arch. de Zoologie Expérimentale et Générale, ii, pp. 429–480.

—— 1873 B

Observations sur la structure et le développement des nageoires des poissons osseux.

Arch. de Zoologie Expérimentale et Générale, ii, pp. xviii–xxiv of "Notes et Revue."

Treats of the structure and development of the fin rays.

Bauer, Franz. 1898 A

Die Ichthyosaurier des oberen weissen Jura.

Palæontographica, xliv, pp. 283–328, with pls. xxv–xxvii.

Although describing only European species this paper contains much of general interest to students of this group.

Bauer, Franz—Continued. 1900 A

Osteologische Notizen über Ichthyosaurier.

Anat. Anzeiger, xviii, pp. 574–588, with 18 figs. in the text.

Treats of the shoulder girdle, the pelvic girdle, and auditory bones.

Baur, George. 1883 A

Der Tarsus der Vögel und Dinosaurier.

Morpholog. Jahrbuch, viii, pp. 417–456, with pls. xix and xx.

Author's copies of this paper were issued in 1882 as an "Inaugural-Dissertation zur Erlangung der Doctorwürde der philosopischen Facultät der Universität München," pp. 1–44, pls. xix and xx.

—— 1884 A

Note on the pelvis in birds and dinosaurs.

Amer. Naturalist, xviii, pp. 1273–1275.

—— 1884 B

Dinosaurier und Vögel. Eine Erwiederung an Herrn Prof. W. Dames in Berlin.

Morpholog. Jahrbuch, x, pp. 446–454.

—— 1884 C

Ueber das Centrale carpi der Säugethiere.

Morpholog. Jahrbuch, x, pp. 455–457.

—— 1884 D

Zur Morphologie des Tarsus der Säugethiere.

Morpholog. Jahrbuch, x, pp. 458–461.

—— 1884 E

Bemerkungen über das Becken der Vögel und Dinosaurier.

Morpholog. Jahrbuch, x, pp. 613–616.

—— 1884 F

Der Carpus der Paarhufer.

Morpholog. Jahrbuch, ix, pp. 597–603.

—— 1885 A

A second phalanx in the third digit of a carinate bird's wing.

Science, v, p. 355.

—— 1885 B

A complete fibula in an adult living carinate bird.

Science, v, p. 375.

—— 1885 C

Zur Vögel-Dinosaurier-Frage.

Zoolog. Anzeiger, viii, pp. 441–443.

—— 1885 D

Note on the sternal apparatus in *Iguanodon*.

Zoolog. Anzeiger, viii, pp. 561–562.

Baur, George—Continued. 1885 E

Zur Morphologie des Carpus and Tarsus der Reptilien.

Zoolog. Anzeiger, viii, pp. 631–638.

—— 1885 F

Ueber das Archipterygium und die Entwicklung des Cheiropterygium aus dem Ichthyopterygium.

Zoolog. Anzeiger, viii, pp. 663–666.

—— 1885 G

On the morphology of the tarsus in the mammals.

Amer. Naturalist, xix, pp. 86–88.

—— 1885 H

On the centrale carpi of the mammals.

Amer. Naturalist, xix, pp. 195-196.

—— 1885 I

The trapezium of the *Camelidæ*.

Amer. Naturalist, xix, pp. 196–197.

See also Morphologisches Jahrbuch, xi, pp. 117–118.

—— 1885 J

On the morphology of the carpus and tarsus of vertebrates.

Amer. Naturalist, xix, pp. 718–720.

Contains a "morphological table" and a list of papers on the carpus and tarsus.

—— 1885 K

Bemerkungen über den "Astragalus" und das "Intermedium tarsi" der Säugethiere.

Morpholog. Jahrbuch, xi, pp. 468–483, with pl. xxvii.

Cites the literature of the subject and gives the results of the author's own observations on the different groups of mammals.

—— 1886 A

Ueber das Quadratum der Säugetiere.

Biolog. Centralb., vi, pp. 648–658.

Also in Sitzungsber. Gesellsch. Morphol. und Physiol. München, 1886, pp. 45–57.

—— 1886 B

Ueber die Morphogonie der Wirbelsäule der Amnioten.

Biolog. Centralb., vi, pp. 332–342; 353–363.

—— 1886 C

Der älteste Tarsus (*Archegosaurus*).

Zoolog. Anzeiger, ix, pp. 104–106.

Compare Baur, G., 1886 I.

—— 1886 D

W. K. Parker's Bemerkungen über *Archæopteryx*, 1864, und eine Zusammenstellung der hauptsächlichen Litteratur über diesen Vogel.

Zoolog. Anzeiger, ix, pp. 106–109.

Baur, George—Continued. 1886 E

Die zwei Centralia im Carpus von *Sphenodon* (*Hatteria*) und die Wirbel von *Sphenodon* und *Gecko verticillatus* Laur. (*G. verus* Gray).

Zoolog. Anzeiger, ix, pp. 188-190.

—— 1886 F

Bemerkungen über *Sauropterygia* und *Ichthyopterygia*.

Zoolog. Anzeiger, ix, pp. 245-252; 323.

—— 1886 G

Osteologische Notizen über Reptilien.

Zoolog. Anzeiger, ix, pp. 685-690; 733-743.

—— 1886 H

Ueber die Homologien einiger Schädelknochen der Stegocephalen und Reptilien.

Anatom. Anzeiger, i, pp. 348-350.

See correction in Anat. Anzeiger, vol. ii, p. 657.

—— 1886 I

The oldest tarsus (*Archegosaurus*).

Amer. Naturalist, xx, pp. 173-174.

Compare Baur, G., 1886 C.

—— 1886 J

The proatlas, atlas, and axis of the *Crocodilia*.

Amer. Naturalist, xx, pp. 288-298, with 5 illus.

—— 1886 K

The intercentrum in *Sphenodon* (*Hatteria*).

Amer. Naturalist, xx, pp. 465-466.

—— 1886 L

The ribs of *Sphenodon* (*Hatteria*).

Amer. Naturalist, xx, pp. 979-981.

—— 1886 M

Ueber die Kanäle im Humerus der Amnioten.

Morpholog. Jahrbuch, xii, pp. 299-308.

—— 1887 A

Ueber die Abstammung der amnioten Wirbeltiere.

Biolog. Centralb., vii, pp. 481-498.

Also in Sitzungsbericht der Gesellschaft für Morphologie und Physiologie, München, 1887, pp. 44-61.

—— 1887 B

Osteologische Notizen über Reptilien. Fortsetzung ii.

Zoolog. Anzeiger, x, pp. 96-102.

—— 1887 C

On the phylogenetic arrangement of the *Sauropsida*.

Jour. Morphology, i, pp. 93-104.

Baur, George—Continued. 1887 D

On the morphology and origin of the *Ichthyopterygia*.

Amer. Naturalist, xxi, pp. 837-840.

Noticed in Geol. Magazine, 1888, v, p. 325.

—— 1887 E

On the morphogeny of the carapace of the *Testudinata*.

Amer. Naturalist, xxi, p. 89.

—— 1887 F

Ueber die Ursprung der Extremitaten der *Ichthyopterygia*.

Bericht über die xx Versammlung des oberrhein. geolog. Vereins, pp. 1-4, with 1 plate.

Pagination taken from an author's separate; the original "Bericht" not seen.

—— 1888 A

Unusual dermal ossifications.

Science, xi, p. 144.

Discusses the origin of carapace and plastron of *Testudinata*.

—— 1888 B

Osteologische Notizen über Reptilien. Fortsetzungen iii, iv, und v.

Zoolog. Anzeiger, xi, pp. 417-424; 592-597; 736-740.

—— 1888 C

Beiträge zur Morphogenie des Carpus und Tarsus der Vertebraten. I. Theil. *Batrachia*. Jena; Verlag von Gustav Fischer, 1888.

8vo, pp. 1-88, with pls. i-iii.

Appended is a list of books, memoirs, etc., 80 in number, which treat of the subject discussed by the author.

—— 1889 A

Die systematische Stellung von *Dermochelys* Blainv.

Biolog. Centralb., ix, pp. 149-153; 180-191; 618-619.

—— 1889 B

Osteologische Notizen über Reptilien. Fortsetzung vi.

Zoolog. Anzeiger, xii, pp. 40-47.

—— 1889 C

Revision meiner Mittheilungen im Zoologischer Anzeiger, mit Nachträgen.

Zoolog. Anzeiger, xii, pp. 238-243.

—— 1889 D

Neue Beiträge zur Morphologie des Carpus der Säugetiere.

Anatom. Anzeiger, iv, pp. 49-51, with 3 figs. in the text.

—— 1889 E

On the morphology of the ribs and the fate of the actinosts of the median fins in fishes.

Jour. Morphology, iii, pp. 463-466.

Baur, George—Continued. 1889 F

On the morphology of the vertebrate skull. I. The otic elements. II. The temporal arches.

Jour. Morphology, iii, pp. 467–474.

—— 1889 G

Mr. E. T. Newton on *Pterosauria.*

Geol. Magazine (3), vi, pp. 171–174.

A review of Newton's paper in Phil. Trans. Roy. Soc., vol. 179, p. 303 (1888), on *Scaphognathus.*

—— 1889 H

The systematic position of *Meiolania,* Owen.

Ann. and Mag. Nat. Hist. (6), iii, pp. 54–62.

—— 1889 I

On "*Aulacochelys,*" Lydekker, and the systematic position of *Anosteira,* Leidy, and *Pseudotrionyx,* Dollo.

Ann. and Mag. Nat. Hist. (6), iii, pp. 273–276.

—— 1889 J

On *Meiolania* and some points in the osteology of the *Testudinata;* a reply to Mr. G. A. Boulenger.

Ann. and Mag. Nat. Hist. (6), iv, pp. 37–45, with pl. vi, and 4 figs. in the text.

—— 1889 K

Bemerkungen über den Carpus der Proboscidier und der Ungulaten im Allgemeinen.

Morpholog. Jahrbuch, xv, pp. 478–482, with 1 fig. in the text.

—— 1890 A

On the characters and systematic position of the large sea lizards, *Mosasauridæ.*

Science, xvi, p. 262.

—— 1890 B

The problems of comparative osteology.

Science, xvi, pp. 281–282.

—— 1890 C

A review of the charges against the palæontological department of the U. S. Geological Survey and of the defense made by Prof. O. C. Marsh.

Amer. Naturalist, xxiv, pp. 288–304.

—— 1890 D

On the classification of the *Testudinata.*

Amer. Naturalist, xxiv, pp. 530–536.

—— 1890 E

Professor Marsh on *Hallopus* and other dinosaurs.

Amer. Naturalist, xxiv, pp. 569–571.

Followed by short note by Prof. E. D. Cope.

Baur, George—Continued. 1890 F

The genera of the *Cheloniidæ.*

Amer. Naturalist, xxiv, pp. 486–487.

—— 1891 A

The horned saurians of the Laramie formation.

Science, xvii, pp. 216–217.

—— 1891 B

Notes on some little-known American fossil tortoises.

Proc. Acad. Nat. Sci. Phila., 1891, pp. 411–430.

—— 1891 C

The pelvis of the *Testudinata,* with notes on the evolution of the pelvis in general.

Jour. Morphology, iv, pp. 345–359, with 13 figs. in the text.

—— 1891 D

Remarks on reptiles generally called *Dinosauria.*

Amer. Naturalist, xxv, pp. 434–454.

Contains a list of 32 papers cited. A review of this paper by Dames is found in Neues Jahrb. Min., etc., 1893, i, Ref., pp. 545–547.

—— 1892 A

Bemerkungen über verschiedene Arten von Schildkröten.

Zoolog. Anzeiger, xv, pp. 155–159.

—— 1892 B

On the morphology of the skull in the *Mosasauridæ.*

Jour. Morphology, vii, pp. 1–22, with pls. i and ii.

—— 1892 C

On the taxonomy of the genus *Emys.*

Proc. Amer. Philos. Soc., xxx, pp. 40–44; 245.

In the "addition" to his note, on page 245, Dr. Baur made some modifications of his views as expressed on pp. 40–44.

—— 1893 A

Notes on the classification and taxonomy of the *Testudinata.*

Proc. Amer. Philos. Soc., xxxi, pp. 210–225.

—— 1893 B

Notes on the classification of the *Cryptodira.*

Amer. Naturalist, xxvii, pp. 672–675.

—— 1893 C

The discovery of Miocene Amphisbænians.

Amer. Naturalist, xxvii, pp. 996–999.

Describes new genus and species *Hyporhina antiqua;* new family *Hyporhinidæ.*

—— 1894 A

Bemerkungen über die Osteologie der Schläfengegend der höheren Wirbeltiere.

Anatom. Anzeiger, x, pp. 315–330.

Includes a list of the titles of 24 papers on the subject discussed.

Baur, George—Continued. 1895 A

Cope on the temporal part of the skull, and on the systematic position of the *Mosasauridæ*. A reply.

Amer. Naturalist, xxix, pp. 998–1002.

—— —— 1895 B

The fins of *Ichthyosaurus*.

Jour. Geology, iii, pp. 238–240.

A review of Prof. Rich. Owen's paper in the Trans. Geol. Soc., ser. 2, vol. v, pp. 511–514.

—— 1895 C

Die Palatingegend der *Ichthyosauria*.

Anatom. Anzeiger, x, pp. 456–459, with 1 fig.

—— 1895 D

Ueber die Morphologie des Unterkiefers der Reptilien.

Anatom. Anzeiger, xi, pp. 410–415, with 4 figs. Nachtrag, p. 569.

Announces the finding of a hitherto unrecognized bone in the lower jaw of reptiles, the *presplenial*.

—— 1895 E

Das Gebiss von *Sphenodon* (*Hatteria*) und einige Bemerkungen über Prof. Rud. Burckhardt's Arbeit über das Gebiss der *Sauropsidæ*.

Anatom. Anzeiger, xi, pp. 436–439.

—— 1896 A

The paroccipital of the *Squamata* and the affinities of the *Mosasauridæ* once more. A rejoinder to Prof. E. D. Cope.

Amer. Naturalist, xxx, pp. 143–147, with pl. iv.

See also pp. 327–329; 411–412.

—— 1896 B

Bemerkungen über die Phylogenie der Schildkröten.

Anatom. Anzeiger, xii, pp. 561–570.

—— 1896 C

The *Stegocephali*: A phylogenetic study.

Anatom. Anzeiger, xi, pp. 657–673, with 8 figs.

Contains description of the osteology of this group and the titles of 34 papers and books relating to the subject.

—— 1897 A

Archegosaurus.

Amer. Naturalist, xxxi, pp. 975–980.

A review of Otto Jaekel's paper on "Die Organization von *Archegosaurus*," and a discussion of the composition of the vertebral column.

—— 1897 B

Ueber die systematische Stellung der Microsaurier.

Anatom. Anzeiger, xiv, pp. 148–151.

Baur, G., and **Case, E. C.** 1897 A

On the morphology of the skull of the *Pelycosauria* and the origin of the mammals.

Anatom. Anzeiger, xiii, pp. 109–120, with 3 figs.

Abstract in Science (2), v, pp. 592–593.

—— —— 1899 A

The history of the *Pelycosauria*, with a description of the genus *Dimetrodon*.

Trans. Amer. Philos. Soc. (2), xx, pp. 1–58, with pls. i–iii, with 7 figs. in the text.

Appended is a list of titles of works on the subject, 70 in number.

Bayer, Franz. 1885 A

Ueber die Extremitäten einer jungen *Hatteria*.

Sitzungsber, k. Akad, Wissensch., Wien, xc, i Abth., pp. 237–245, with 1 pl.

Bayle, Émile de. 1855 A

Notice sur le système dentaire de l' *Anthracotherium magnum*.

Bull. Soc. Geol. France (2), xii, pp. 936–947, with pl. xxii.

Beard, J. 1890 A

The interrelationships of the *Ichthyopsida*.

Anatom. Anzeiger, v, pp. 146–159, 179–188.

Beddard, Frank E. 1888 A

Note on the systematic position of *Monitor*.

Anatom. Anzeiger iii, pp. 204–206.

—— 1897 A

Note upon intercentra in the vertebral column of birds.

Proc. Zool. Soc. London, 1897, pp. 465–472, with 4 figs. in the text.

Belcher, Edward. 1856 A

Notice of the discovery of *Ichthyosaurus* and other fossils in the late Arctic exploring expedition, 1852–1854.

Report Brit. Assoc. Adv. Sci., 25th meeting, Glasgow, 1855, p. 79.

Found, latitude 77° 16′ N., longitude, 96° W.

Bell, Robert. 1898 A

On the occurrence of mammoth and mastodon remains around Hudson Bay.

Bull. Geol. Soc. America, ix, pp. 369–390, with 1 fig. in the text.

See also Science vii (n. s.), p. 80.

Bemmelen, J. F. van. 1896 A

Bemerkungen zur Phylogenie der Schildkröten.

Compte-rendu des séances du troisième Congrès Internat. de Zoologie, Leyden, 1895, pp. 322–335.

Bemmelen, J. F. van—Cont'd. 1896 B

Bemerkungen über den Schädelbau von *Dermochelys coriacea*.

Festschrift zum 70sten Geburtstage von Carl Gegenbaur, ii, pp. 279-285, with pl. i.

—— 1899 A

On reptilian affinities in the temporal region of the monotreme skull.

Proc. Fourth Internat. Congress of Zoology, Cambridge, England, pp. 162-164.

Bensley, B. A. 1900 A

On the inflection of the angle of the jaw in the *Marsupialia*.

Science (2), xii, pp. 558-559.

Bensted, W. H. 1861 A

Remains of American "*Missourium*" associated with flint implements.

The Geologist, iv, pp. 217-221. See also p. 262.

Letter containing extract from Albert Koch's "Description of the *Missourium*, or Missouri Leviathan, together with its supposed habits and Indian tradition." London, E. Fisher, 1841.

Béraneck, Ed. 1887 A

Ueber das Parietalauge der Reptilien.

Jenaische Zeitschrift, xxi (xiv), pp. 374-410, with pp. 374-410.

Berthold, Arnold A. 1850 A

Ueber das Backenzahnsystem des Narwals.

Archiv. f. Anat., Physiol. u. wissensch. Med., Jahrg. 1850, pp. 386-392, pl. x, figs. 7, 8.

Bettany, G. T. 1873 A

Oreodon remains in the Woodwardian Museum, Cambridge.

Nature, viii, pp. 309-311.

See also Nature, viii, p. 385.

—— 1876 A

On the genus *Merycochœrus* (family *Oreodontidæ*), with descriptions of two new species.

Quart. Jour. Geol. Soc., xxxii, pp. 259-273, with pls. xvii, xviii.

Beyer, Samuel Walker. 1899 A

Geology of Story County.

Iowa Geol. Survey, ix, pp. 157-239.

Refers to the finding of a tooth of *Elephas primigenius* at Polk City.

Beyrich, E. 1848 A

Ueber *Xenacanthus decheni* und *Holacanthus gracilis*, zwei Fische aus der Formation des Rothliegenden in Nord Deutschland.

Bericht Verhandl. k. preuss. Akad. Wissensch. zu Berlin, 1848, pp. 24-33.

Beyrich, E.—Continued. 1850 A

Ueber einige organische Reste der Lettenkohlenbildung in Thuringen.

Zeitschr. deutsch. geol. Gesellsch., ii, pp. 153-168.

—— 1877 A

Ueber einen *Pterichthys* von Gerolstein.

Zeitschr. deutsch. geol. Gesellsch., xxix, pp. 751-756, and pl. x.

Bibbins, Arthur. 1895 A

Notes on the palæontology of the Potomac formation.

Johns Hopkins University Circulars, xv, No. 121, pp. 17-20, with 2 figs.

Mentions the finding of teeth of certain dinosaurs.

Bienz, Amié. 1895 A

Dermatemys mavii Gray; eine osteologische Studie mit Beiträgen zur Kenntniss vom Baue der Schildkröten.

Revue suisse de zool. et Ann. Musée d' Hist. Nat. Genève, iii, pp. 61-135, with pls. ii, iii.

The literature of the subject is presented, p. 135.

Billings, E. 1863 A

On the remains of the fossil elephant in Canada.

Canadian Nat. and Geol. (1), viii, pp. 135-147, with 5 figs. in the text.

Bischoff, Th. Ludwig Wilhelm. 1840 A

Lepidosiren paradoxa. Anatomisch untersucht und beschrieben.

Leipzig, 1840, 4 to, pp. 1-vi; 1-34, with pls. i-vii.

Blackmore, Humphrey P. 1874 A

On fossil *Arvicolidæ*.

Proc. Zool. Soc. London, 1874, pp. 460-471, with 3 figs. of the teeth.

Blainville, H. M. Ducrotay de. 1839 A

Recherches sur l'ancienneté des Édentés terrestres à la surface de la terre.

Comptes rendus de l'Acad. Sci. Paris, viii, pp. 65-69.

See also Ann. Sci. Nat. (2), xi, pp. 113-122.

—— 1839 B

Mémoire sur les traces qu'ont laissées à la surface de la terre les Édentés terrestres.

Comptes rendus de l'Acad. Sci. Paris, viii, pp. 139-146.

—— 1839 C

Recherches sur l'ancienneté des Édentés terrestres à la surface de la terre.

Ann. Sci. Naturelles (2), xi, pp. 113-122.

Blainville, H. M. Ducrotay de—Continued. 1864 A

Ostéographie ou description iconographique comparée du squelette et du système dentaire des mammifères récent et fossiles pour servir de base à la zoologie et à la géologie.

Vols. i-iv, 4to, with pls. vols. i-iv.

Vol. i, *Primates*, *Chiroptera*, *Insectivora;* vol. ii, *Carnivora;* vol. iii, *Gravigrada*, *Ungulagrada;* vol. iv, *Ungulagrada*, *Bradypus*.

This important work was issued in livraisons from 1839 to 1864. Hence, in the citations found in the catalogue of species, this year, 1864, must be regarded as arbitrary.

Blake, Chas. C. 1862 A

On a fossil elephant from Texas (*E. texianus*).

The Geologist, v, pp. 57-58, with pl. iv.

—— 1862 B

Elephas texianus v. *columbi*.

The Geologist, vi, pp. 56-60, with 1 text fig.

—— 1863 A

On the geological evidences of horses in the New World.

The Geologist, vii, pp. 24-28.

Blake, William P. 1855 A

Remains of the mammoth and mastodon in California.

Amer. Jour. Sci. (2), xix, p. 133.

—— 1864 A

Note on fossil remains of the horse and elephant, mingled, at Mare Island, San Francisco Bay.

Proc. California Acad. Nat. Sci., iii, p. 166.

The species not determined.

—— 1867 A

Fossil fish in Great Basin, Nevada.

Proc. California Acad. Nat. Sci., iii, pp. 306-307.

No genera or species designated.

—— 1867 B

Notice of fossil elephants' teeth from the northwest coast.

Proc. California Acad. Nat. Sci., iii, p. 325.

Calls attention to the finding of teeth and tusks of elephants in Alaska; also gives localities in California where such remains have been discovered.

—— 1868 A

Note upon the occurrence of fossil remains of the tapir in California.

Amer. Jour. Sci. (2), xlv, p. 381.

—— 1870 A

On a fossil tooth from Table Mountain.

Amer. Jour. Sci. (2), l, pp. 262-263.

Blake, William P.—Continued. 1898 A

Remains of a species of *Bos* in the Quaternary of Arizona.

Amer. Geologist, xxii, pp. 65-72.

—— 1898 B

Bison latifrons and *B. arizonica*.

Amer. Geologist, xxii, pp. 247-248.

—— 1900 A

Remains of the mammoth in Arizona.

Amer. Geologist, xxvi, p. 257.

Records occurrence of *Elephas primigenius* (?) at Yuma.

Blanchard, Émile. 1857 A

De la détermination de quelques oiseaux fossiles et des caractères ostéologiques des Gallinacés ou Gallides.

Annales Sci. Naturelles (4), Zool., vii, pp. 91-106, with pls. x-xii.

—— 1859 A

Recherches sur les caractères ostéologiques des oiseaux appliquées a la classification naturelle de ces animaux.

Annales Sci. Naturelles (4), Zool., pp. 11-145.

—— 1860 A

Observations sur le système dentaire chez les oiseaux.

Comptes rend. des séance de l'Acad. sciences, Paris, l, pp. 540-542.

Blasius, Wilhelm. 1884 A

Zur Geschichte der Ueberreste von *Alca impennis* Linn.

Jour. für Ornithologie, xxxii, pp. 58-176.

Blatchley, W. S. 1898 A

The geology of Lake and Porter counties, Indiana.

22d Ann. Report Depart. Geol. and Natural Resources [of Indiana] for 1897, pp. 25-104, with 9 figs. in the text.

Contains notes on the finding of the mammoth and the mastodon.

Bloch, Leopold. 1900 A

Schwimmblase, Knochenkapsel und Weber'scher Apparat von *Nemachilus barbatulus* Günther.

Jenaische Zeitschr. Naturwiss., xxxiv, pp. 1-64, with pls. i, ii, and 12 figs. in the text.

Appended is a list of 75 memoirs and papers on the subject.

Blyth, E. 1837 A

On the osteology of the great auk (*Alca impennis*).

Proc. Zool. Soc. London, 1837, pp. 122-123.

Boas, J. E. V. 1884 A

Bemerkungen über die Polydactylie des Pferdes.

Morpholog. Jahrbuch, x, pp. 182-184.

Boas, J. E. V.—Continued. 1890 A

Ueber den Metatarsus der Wiederkäuer.

Morpholog. Jahrbuch, xvi, pp. 525–583, with 6 figs. in the text.

Bojanus, L. H. 1827 A

De uro nostrate eiusque sceleto commentatio.

Nova Acta Acad. Cæs. Leop.-Car., xiii, pt. ii, pp. 413–478, with 5 pls.

Refers (p. 427) *Bison latifrons* to *Urus priscus*.

Born, G. 1876 A

Zum Carpus und Tarsus der Saurier.

Morpholog. Jahrbuch, ii, pp. 1–26, with pl. i.

—— 1880 A

Nachträge zu "Carpus und Tarsus."

Morpholog. Jahrbuch, vi, pp. 49–78, with pl. i.

Appended is a list of authors and works referred to, 14 in number.

Boule, Marcellin. 1899 A

Observations sur quelques équidés fossiles.

Bull. Soc. Geol., France (3), xxvii, pp. 531–542, with 22 figs. in the text.

Boulenger, G. A. 1882 A

Catalogue of the *Batrachia Gradientia* s. *Caudata* and *Batrachia Apoda* in the collection of the British Museum; second edition.

Pp. i–viii; 1–127, with pls. i–ix.

—— 1882 B

Catalogue of the *Batrachia Salientia* s. *Ecaudata* in the collection of the British Museum; second edition.

Pp. i–xvi; 1–503, with pls. i–xxx, with numerous figs. in the text.

—— 1884 A

Synopsis of the families of existing *Lacertilia*.

Ann. and Mag. Nat. Hist. (5), xiv, pp. 117–122.

—— 1885 A

Catalogue of the lizards in the British Museum.

Vol. i, pp. 436, pls. 32. Vol ii, pp. 497, pls. 24. London, 1885.

—— 1887 A

Catalogue of the lizards in the British Museum.

Vol. iii, pp. 575; pls. 40. London, 1887.

—— 1888 A

Remarks on a note by Dr. G. Baur on the Pleurodiran chelonians.

Ann. and Mag. Nat. Hist. (6), ii, pp. 352–354.

Dr. Baur's note occurs in Zoolog. Anzeig., Aug., 1888.

Boulenger, G. A.—Continued. 1889 A

Catalogue of the chelonians, rhynchocephalians, and crocodiles in the British Museum.

London, 1889, pp. 311, 6 pls.

—— 1889 B

Remarks in reply to Dr. Baur's article on the systematic position of *Miolania*.

Ann. and Mag. Nat. Hist. (6), iii, pp. 138–141, with figs. in the text.

—— 1891 A

Notes on the osteology of *Heloderma horridum* and *H. suspectum*, with remarks on the systematic position of the *Helodermatidæ* and on the vertebræ of the *Lacertilia*.

Proc. Zool. Soc. London, 1891, pp. 109–118, with 6 woodcuts.

—— 1891 B

On British remains of *Homœosaurus*, with remarks on the classification of the *Rhynchocephalia*.

Proc. Zool. Soc. London, 1891, pp. 167–172, with 2 woodcuts.

—— 1893 A

Catalogue of the snakes in the British Museum (Natural History). Vol. i, containing the families *Typhlopidæ*, *Glauconiidæ*, *Boidæ*, *Ilysiidæ*, *Uropeltidæ*, *Xenopeltidæ*, and *Colubridæ Aglyphæ*, part.

Pp. i–xiii; 1–448, with pls. i–xxviii and 26 figs. in the text.

—— 1894 A

Catalogue of the snakes in the British Museum (Natural History). Vol. ii, containing the conclusion of the *Colubridæ Aglyphæ*.

Pp. i–xi; 1–377, with pls. i–xx, and 25 figs. in the text.

—— 1895 A

Remarks on the value of certain cranial characters employed by Professor Cope for distinguishing lizards from snakes.

Ann. and Mag. Nat. Hist. (6), xvi, pp. 366–367, with 1 fig. in the text.

—— 1896 A

Remarks on the dentition of snakes and on the evolution of the poison fangs.

Proc. Zool. Soc. London, 1896, pp. 614–616.

Boulenger, G. A.—Continued. 1896 B

On the occurrence of Schlegel's gavial (*Tomistoma schlegelii*) in the Malay peninsula, with remarks on the atlas and axis of the crocodilians.

Proc. Zool. Soc. London, 1896, pp. 628–633, with 3 figs. in the text.

—— 1896 C

Catalogue of the snakes in the British Museum (Natural History) Vol. iii, containing the *Colubridæ* (*Opisthoglyphæ* and *Proteroglyphæ*), *Amblycephalidæ*, and *Viperidæ*.

Pp. i–xiv; 1–727, with 37 figs. in the text.

Bouvé, T. T. 1859 A

Statement with regard to *Zeuglodon cetoides*.

Proc. Nat. Hist. Soc. Boston, vi, pp. 421–422.

—— 1859 B

Communication regarding priority of describing fossil footprints of the Connecticut Valley.

Proc. Nat. Hist. Soc. Boston, vii, pp. 49–53.

Bowerbank, J. S. 1848 A

Microscopical examination on the structure of the bones of *Pterodactylus giganteus* and other fossil animals.

Quart. Jour. Geol. Soc. Lond., iv, pp. 2–10, with pls. i, ii.

—— 1851 A

On the pterodactyles of the Chalk formation.

Proc. Zool. Soc. Lond., 1851, pt. xix, pp. 14–20, with pl. iv.

—— 1852 A

On the probable dimensions of the great shark (*Carcharias megalodon*) of the Red Crag.

Report Brit. Assoc. Adv. Sci., 21st meeting, Ipswich, 1851, p. 54.

—— 1852 B

On the probable dimensions of *Carcharodon megalodon* from the Crag.

Ann. and Mag. Nat. Hist. (2), ix, pp. 120–123.

Bowers, Stephen. 1889 A

An abstract of a letter regarding the finding of the remains of fossil vertebrates in Ventura, Cal.

Amer. Geologist, iv, pp. 391–392.

Boyd, C. H. 1881 A

Remains of the walrus (?) in Maine.

Proc. U. S. Nat. Mus., iv, pp. 234–235.

Brainerd, ——. 1852 A

Fossil fishes.

Annals of Science (Cleveland, Ohio), i, pp. 18–20, with 3 text figs.

No specific name is applied to the fishes described. They are now known as *Gonatodus brainerdi* (Newb.).

Branco, W. 1885 A

[Review of G. Baur on "Dinosaurier und Vögel" and W. Dames on "Entgegnung an Herrn Dr. Baur"].

Neues Jahrbuch Min. Geol. u. Palæont, 1885, ii, Referate, pp. 437–441.

—— 1887 A

Beiträge zur Kenntniss der Gattung *Lepidotus*.

Abhandl. zur geolog. Specialkarte von Preussen und der Thüringischen Staaten vii. Heft 4. pp. 1–85, with pls. i–vii.

—— 1897 A

Die menschenähnlichen Zähne aus dem Bohnerz der schwäbischen Alb. Teil ii, Art und Ursache der Reduktion des Gebisses bei Säugern.

Stuttgart, 1897, pp. 1–128.

Brandt, Alexander. 1867 A

Kurze Bemerkungen über aufrechtstehende Mammuthleichen.

Bull. Soc. Imp. des Naturalistes de Moscou, xl, pt. 2, pp. 241–256.

Brandt, Ed. 1868 A

Untersuchungen über das Gebiss der Spitzmäuse (*Sorex* Cuv.).

Bull. Soc. Imp. Nat. Moscou, xli. pt. 2, pp. 76–95, with pls. i–vi.

—— 1870 A

Untersuchungen über das Gebiss der Spitzmäuse (*Sorex* Cuv.).

Bull. Soc. Imp. Nat. Moscou, xliii, pt. 2, pp. 1–40.

—— 1888 A

Vergleichend - anatomische Untersuchungen über die Griffelbeine (Ossa calamiformia) der Wiederkäuer (*Ruminantia*).

Zoolog. Anzeiger xi, pp. 542–548.

Brandt, Johann Friedrich. 1840 A

Beiträge zur Kenntniss der Naturgeschichte der Vögel mit besonderer Beziehung auf Skeletbau und vergleichende Zoologie.

Mém. Acad. Imp. Sci. St. Pétersbourg (6), Sci. Nat., iii, pp. 81–237, with pls. i–xviii.

Brandt, Johann Friedrich—C't'd. 1844 A

Notiz über die fossilen Knochen des Cetotheriums.

Verhandl. d. kais.-russ. mineralog. Gesellsch. St. Petersburg, 1844, pp. 240–244.

—— 1848 A

On the position in which the mammoth and rhinoceros have been found in Siberia; from a letter to Baron A. von Humboldt.

Quart. Jour. Geol. Soc., iv, pp. 9–12. (Translations and notices.)

—— 1849 A

Symbolæ Sirenologicæ, quibus præcipue *Rhytinæ* historia naturalis illustratur.

Mém. Acad. Imp. St. Pétersbourg (6), Sci. Nat., v.; Zool. et Physiol., pp. 1–160, with pls. i–v.

—— 1849 B

De *Rhinocerotis antiquitatis* seu *pallasii* structura externa et osteologica observationes e reliquiis quæ in museis Petropolitanis servantur erutæ.

Mém. Acad. Sci. St. Pétersbourg (6), v, pt. ii, pp. 161–416, with pls. i–xxiv.

—— 1855 A

Beitrage zur nähern Kenntniss der Säugethiere Russlands.

Mém. Acad. Imp. Sci. St. Pétersbourg (6), vii, pp. 1–365, with pls. i–iii and i–xi.

Abhandlung 3 considers the question of the specific identity of the beaver of America with that of the Old World; also the variation of certain bones of the beaver's skull. Abhandlung 4 treats of the gradual advances in the classification of the rodents, with especial reference to the beaver. Abhandlung 5 deals with stages of craniological development of the rodents and the relationships and the classification to be determined therefrom, with especial reference to the beaver.

—— 1862 A

Bemerkungen über die Zahl der Halswirbel der Sirenien.

Mélanges Biol. Bull. Acad Imp. Sci. St. Pétersb., iv, pp. 125–128.

—— 1862 B

Einige Worte über die verschiedenen Entwicklungsstufen der Nasenbeine der Seekühe (*Sirenia*).

Mélanges Biol. Bull. Acad. Imp. Sci. St. Pétersb., iv, pp. 129–132.

—— 1862 C

Bemerkungen über die Verbreitung und Vertilgung der *Rhytina*.

Mélanges Biol. Bull. Acad. Imp. Sci. St. Pétersb., iv, pp. 259–268.

Brandt, Johann Friedrich—C't'd. 1866 A

Mittheilungen über die Gestalt und Unterscheinungsmerkmale des Mammuth oder Mamont (*Elephas primigenius*).

Mélanges Biol. Bull. Acad. Imp. Sci. St. Pétersb., v, pp. 567–605, with 1 pl. Also "Ergänzungen," pp. 640–644.

—— 1866 B

Zur Lebensgeschichte des Mammuth.

Bull. Acad. Imp. Sci. St. Pétersb., x, pp. 111–118.

—— 1866 C

Nochmaliger Nachweis der Vertilgung der nordischen oder Steller'schen Seekuh (*Rhytina borealis*).

Bull. Soc. Imp. des Naturalistes de Moscou, xxxix, pp. 572–597.

—— 1867 A

Ergänzende Mittheilungen zur Erläuterung der ehemaligen Verbreitung und Vertilgung der Steller'schen Seekuh.

Mélanges Biol. Bull. Acad. Imp. Sci. St. Pétersb., vi, pp. 223–282.

Contains an account of the literature of the subject.

—— 1867 B

Untersuchungen über die geographische Verbreitung des Renthiers (*Cervus tarandus* Linn.) in Bezug auf die Würdigung der fossilen Reste derselben.

Verhandl. russ.-kais. mineralog. Gesellschaft zu St. Petersburg (2), ii, pp. 36–132.

—— 1867 C

Die geographische Verbreitung des Zubr, oder Bison, des Auerochsen der Neuern (*Bos bison* seu *bonasus*).

Verhandl, russ.-kais. mineral. Gesellsch. zu St. Petersburg (2), ii, pp. 133–185.

—— 1867 D

Einige Schlussworte zum Nachweis der Vertilgung der *Rhytina*.

Bull. Soc. Imp. des Naturalistes de Moscou, xl, pt. i, pp. 23–38.

See also pt. ii, pp. 508–543.

—— 1868 A

Symbolæ Sirenologicæ. Fasciculi ii et iii. Sireniorum, Pachydermatum, Zeuglodontum et Cetaceorum ordinis osteologia comparata, nec non Sireniorum generum Monographie.

Mém. Acad. Imp. Sci. St. Pétersbourg (7), xii, No. 1, pp. 1–383, with pls. i–ix.

Brandt, Johann Friedrich—C't'd. 1869 A

De Dinotheriorum genere Elephantidorum familiæ adjungendo, nec non de Elephantidorum generum craniologia comparata.

Mém. Acad. Imp. Sci. St. Pétersbourg (7), xiv, No. 1, pp. 1-37.

—— 1869 B

Untersuchungen über die Gattung der Klippschliefer (*Hyrax.* Herm.), besonders in anatomischer und verwandtschaftlicher Beziehung nebst Bemerkungen über ihre Verbreitung und Lebensweise.

Mém. Acad. Imp. Sci. St. Pétersbourg (7), xiv, pp. i-vi; 1-127, with pls. i-iii.

—— 1873 A

Untersuchungen über die fossilen und subfossilen Cetaceen Europa's. Mit Beiträgen von Van Beneden, Cornalia, Gastaldi, Quenstedt und Paulson nebst einem geologischen Anhange von Barbot de Marny, G. v. Helmersen, A. Goebel und Th. Fuchs.

Mém. Acad. Imp. Sci. St. Pétersbourg (7), xx, No. 1, pp. i-viii; 1-372, with pls. i-xxiv.

—— 1874 A

Ergänzungen zu den fossilen Cetaceen Europa's.

Mém. Acad. Imp. Sci. St. Pétersbourg (7), xxi, No. 6, pp. i-iv,; 1-54, with pls. i-v.

—— 1878 A

Tentamen synopseos rhinocerotidum viventium et fossilium.

Mém. Acad. Imp. Sci. St. Pétersbourg (7), xxvi, No. 5, pp. i-ii; 1-66, with one plate.

Braus, Hermann. 1898 A

Über die Extremitäten der Selachier.

Verhandl. Anat. Gesellsch., 12th meeting, Kiel, 1898, pp. 166-179, with 1 page of figs.

Brevoort, J. C. 1859 A

Remains of the American mastodon found on Long Island, near New York.

Proc. Amer. Assoc. Adv. Sci., 12th meeting, Baltimore, 1858, pp. 232-234.

Brewer, W. H. 1866 A

Alleged discovery of an ancient human skull in California.

Amer. Jour. Sci. (2), xlii, p. 424.

Bridge, T. W. 1877 A

The cranial osteology of *Amia calva.*

Jour. Anat. and Physiol., xi, pp. 605-622; pl. xxiii.

Bridge, T. W.—Continued. 1889 A

Some points in the cranial anatomy of *Polypterus.*

Proc. Birmingham Philos. Soc., vi, pp. 118-130, with pls. i-ii.

—— 1895 A

On certain features in the skull of *Osteoglossum formosum.*

Proc. Zool. Soc. Lond., 1895, pp. 302-310, with pl. xxii.

—— 1896 A

The mesial fins of Ganoids and Teleosts.

Jour. Linn. Soc. Lond., xxv, pp. 530-602, with pls. xxi-xxiii.

—— 1898 A

On the morphology of the skull in the Paraguayan *Lepidosiren* and in other Dipnoids.

Trans. Zool. Soc. Lond., xiv., pp. 325-376, with pls. xxviii, xxix.

Bridge, T. W., and **Haddon,** A. C. 1889 A

Contributions to the anatomy of fishes. I. The air bladder and Weberian ossicles in the *Siluridæ.*

Proc. Roy. Soc. Lond., xlvi, pp. 309-328.

—— —— 1892 A

Contributions to the anatomy of fishes. II. The air bladder and Weberian ossicles in the Siluroid fishes.

Proc. Roy. Soc. Lond., lii, pp. 139-157.

Bridge, William J. 1879 A

On the osteology of *Polyodon folium.*

Philos. Trans. Royal Soc. of Lond. for 1878, clxix, pt. ii; pp. 683-733, with pls. lv-lvii.

Briggs, C. 1838 A

Bones of the mastodon.

Second Annual Report Geol. Surv. Ohio, pp. 127-129.

Britton, N. L. 1885 A

[Remarks on finding of mastodon remains east of the Hudson River; followed by remarks by Prof. D. S. Martin and Dr. O. P. Hubbard.]

Trans. N. Y. Acad. Sci., v, pp. 14, 15.

Broadhead, G. C. 1870 A

Fossil horse in Missouri.

Trans. Acad. Sci. St. Louis, iii, pp. xx-xxi. Reprinted in Amer. Naturalist, iv, p. 60.

Found in Bates County, Mo., 31 feet below the surface; said by Leidy to belong to an extinct species.

Broadhead, G. C.—Continued. 1870 B

Bones of large mammals in drift.

Trans. Acad. Sci. St. Louis, iii, pp. xxii, xxiii.

Tooth of extinct ox found in Missouri; also in Illinois. Probably *Bos latifrons*.

—— 1881 A

The mastodon.

Kansas City Review of Science and Industry, iv, pp. 519–580.

Mentions numerous localities in North America where the bones of the mastodon have been found.

Broili, Ferdinand. 1899 A

Ein Beitrag zur Kenntniss von *Eryops megacephalus* (Cope).

Palæontographica, xlvi, pp. 61–84, with pls. viii–x.

Brongniart, Chas. 1888 A

Sur un nouveau poisson fossile du terrain houiller de Commentry (Allier), *Pleuracanthus gaudryi*.

Bull Soc. Géol. France (3), xvi, pp. 546–550, with 1 fig. in the text.

—— 1888 B

Sur un nouveau poisson fossile du terrain houiller de Commentry (Allier). *Pleuracanthus gaudryi*.

Le Naturaliste, x, pp. 178–180, with 1 fig. in the text.

The figure gives a restoration of this remarkable Elasmobranch.

—— 1888 C

Études sur le terrain houiller de Commentry. Faune ichthyologique. Prèmière partie.

Extracted from Bull. de la Société de l'Industrie minérale (3), ii, livrais. 4me, pp. 3–38, with 15 figs. in the text.

This paper is devoted to the description of the structure and relationships of the genus *Pleuracanthus*, and especially the species *P. gaudryi*.

Bronn, Heinrich Georg. 1837 A

Lethæa geognostica, oder Abbildungen und Beschreiben der für die Gebirgs-Formation bezeichnendsten Versteinerungen.

Vol. i, pp. i–vi; 1–544, with pls. i–xxvii of the atlas.

Vol. i contains an account of palæontology up to the period of the chalk.

—— 1838 A

Lethæa geognostica, etc.

Vol. ii, pp. 545–1350, with pls. xxviii–xlvii of the atlas.

Vol. ii contains the palæontology from the beginning of the Cretaceous to the recent period.

Brooke, Victor. 1874 A

On Sclater's muntjac and other species of the genus *Cervulus*.

Proc. Zool. Soc. Lond., 1874, pp. 33–42, with pls. viii, ix, and 5 figs. in the text.

—— 1878 A

On the classification of the *Cervidæ*, with a synopsis of the existing species.

Proc. Zool. Soc. Lond., 1878, pp. 883–928, with pl. lv and 19 figs. in the text.

Broom, R. 1897 A

On an apparently hitherto undescribed nasal-floor bone in the hairy armadillo.

Jour. Anat. and Physiol., xxx, pp. 280–282.

Brown, Campbell. 1900 A

Ueber das genus *Hybodus* und seine systematische Stellung.

Palæontographica, xlvi, pp. 149–174, with pls. xv, xvi, and 7 figs. in the text.

Browne, Montagu. 1889 A

On a fossil fish (*Chondrosteus*) from Barrow-on-Soar, hitherto recorded only from Lyme Regis.

Trans. Leicester Literary and Philos. Soc., 1889, pp. 16–36, with pls. i, ii, and 3 text figs.

Bru, D. Jean Baptiste. 1804 A

Description des os du *Megatherium* faité en montant le squelette.

Annales du Muséum, v, pp. 387–400.

Bruce, Adam T. 1883 A

Observations upon the brain casts of Tertiary mammals.

Contrib. E. M. Mus. Geol. and Arch. Princeton Coll. Bull. No. 3, pp. 36–45, with pl. vii.

Brühl, Bernhard Carl. 1847 A

Die Skeletlehre der Fische.

Vienna, 1847, 8vo., pp. 1–254, with atlas of 19 pls.

Buckland, William. 1824 A

Notice on the *Megalosaurus*, or great fossil lizard of Stonesfield.

Trans. Geol. Soc. Lond. (2), i, pp. 390–396, with pls. xl–xliv.

—— 1831 A

On the occurrence of the remains of elephants and other quadrupeds in the cliffs of frozen mud in Eschscholtz Bay, within Bering Strait, and in other distant parts of the shores of the arctic seas.

Appendix to Beechey's Narrative of a voyage to the Pacific and Behring's Strait to cooperate with the polar expeditions; performed on H. M. S. *Blossom*, pp. 593–612, with pls. i–iii.

Buckland, William—Continued. 1837 A

Geology and mineralogy considered with reference to natural theology.

In two volumes, Philadelphia, 1837.

Vol. i contains the text, consisting of 443 pages. Vol. ii contains the pls. i-lxix, the explanation of the plates, and the index.

Buckley, S. B. 1843 A

Notice of the discovery of a nearly complete skeleton of the *Zygodon* of Owen (*Basilosaurus* of Harlan).

Amer. Jour. Sci., xliv, pp. 409-412.

Reprinted in Edinburgh New Philos. Jour., vol. xxxv, pp. 77-79, 1843.

—— 1846 A

On the Zeuglodon remains of Alabama.

Amer. Jour. Sci. (2), ii, pp. 125-129.

Abstract of this paper printed in Neues Jahrbuch für Mineralogie, 1847, pp. 510-512.

Büchner, Eug. 1891 A

Die Abbildungen der nordischen Seekuh (*Rhytina gigas* Zimm.). Mit besonderer Berücksichtigung neu aufgefundener Materialien in seiner Majestät höchst Eigenen Bibliothek zu Zarskoje Sselo.

Mém. Acad. Imp. Sci. St.-Pétersbourg (7), xxxviii, No. 7, pp. 1-24, with 1 pl.

Burckhardt, Rudolph. 1895 A

Das Gebiss der Sauropsiden.

Schwalbe's Morpholog. Arbeiten, v, pp. 341-385.

Cites the literature of the subject.

—— 1900 A

On *Hyperodapedon gordoni*.

Geol. Magazine (4), vii, pp. 486-492; 529-535, with pl. xix, and 3 text figs.

Burmeister, Hermann. 1864 A

Noticias preliminares sobre las diferentes especies de *Glyptodon* en el Museo Público de Buenos Aires.

Anales del Museo Púb. Buenos Aires, i, pp. 71-85.

—— 1865 A

Bemerkungen über die Arten der Gattung *Glyptodon* im Museo Público de Buenos Aires.

Archiv für Anatomie, Physiol., und wissensch. Med., Jahrg., 1865, pp. 317-334, pls. vii, viii, A.

See also Ann. and Mag. Nat. Hist. (3), xiv, pp. 81-97.

—— 1865 B

Hautpanzer bei *Mylodon*.

Archiv f. Anat. Physiol. u. wissensch. Med., Jahrg., 1865, pp. 334-336.

Burmeister, Hermann—Cont'd. 1865 C

Noticias preliminares sobre las diferentes especies de *Glyptodon* en el Museo Público de Buenos Aires.

Anales Mus. Púb. Buenos Aires, i, pp. 71-85.

—— 1866 A

On *Glyptodon* and its allies.

Ann. and Mag. Nat. Hist. (3), xviii, pp. 299-304.

—— 1866 B

Fauna Argentina, Primera parte, Mamíferos fósiles.

Anales Museo Púb. Buenos Aires, i, pp. 87-232, with pls. 5-8.

—— 1867 A

Fauna Argentina. Primera parte. Mamíferos fósiles.

Anales Museo Púb., Buenos Aires, i, pp. 233-300, with pls. ix-xiv.

—— 1870 A

Ueber das Becken von *Megatherium*.

Verhandl. k. k. zoolog.-bot. Gesellschaft Wien, xx, pp. 381-388.

—— 1871 A

Ueber *Hoplophorus euphractus*.

Archiv f. Anat., Physiol. u. wissensch. Med., Jahrg. 1871, pp. 164-179, pl. vii A.

—— 1871 B

Osteologische Notizen zur Kunde der Panzerthiere Süd-Amerikas.

Archiv f. Anat., Physiol. u. wissensch. Med., Jahrg. 1871, pp. 418-429, pl. xi a; pp. 694-715, pl. xviii.

—— 1871 C

On *Saurocetes argentinus*, a new type of *Zeuglodontidæ*.

Ann. and Mag. Nat. Hist. (4), vii, pp. 51-55.

—— 1872 A

Uebersicht der Glyptodonten.

Archiv für Naturgeschichte, xxxviii, i, pp. 250-264.

—— 1873 A

Studien an *Megatherium americanum*.

Archiv f. Anat., Physiol., u. wissensch. Med., Jahrg. 1873, pp. 626-662, pl. xi.

—— 1875 A

Die fossilen Pferde der Pampasformation, beschrieben von Dr. Herman Burmeister, Director des Museo Público in Buenos Aires. Eine im Auftrage der Provinzial-Regierung von Buenos Aires für die internationale Ausstellung zu Philadelphia verfasste Monographie.

Buenos Aires, 1875. Pp. 1-viii; 1-88, with pls. i-viii. Printed in both Spanish and German.

For supplementary volume see Burmeister, H., 1889 A.

Burmeister, Hermann—Cont'd. 1874 A

Monografía de los Glyptodontes en el Museo Público de Buenos Aires.

Anales Mus. Púb. Buenos Aires, ii, pp. 1-412, with pls. i-xlii.

In this monograph are described the genera *Panochthus*, *Hoplophorus*, *Glyptodon*, and *Dœdicurus*.

This monograph was issued in parts at intervals between 1870 and 1874.

—— 1879 A

Neue Beobachtungen an *Dœdicurus giganteus*.

Abhandl. k. Akad. Wissenschaften, Berlin, 1878, pp. 1-23, pls. i, ii.

—— 1879 B

Description physique de la République Argentine d'après des observationes personelles et étrangères. Traduit de l'allemand avec le concourse de E. Daireaux. Tome troisième: Animaux vertébrés. Première partie: Mammifères vivants et èteints. Avec atlas.

Buenos Ayres, 1879, pp. 1-556.

—— 1883 A

Beschreibung des Panzers von *Eutatus seguini*.

Sitzungsber. k.-p. Akad. Wissensch., Berlin, Jahrg,, 1883, pp. 1045-1063, pl. xiii.

—— 1888 A

Bericht über *Mastodon andium*.

Sitzungsber. k.-p. Akad. Wissensch., Berlin, Jahrg., 1888, pp. 717-729.

—— 1888 B

Ein vollständiger Schädel des Megatherium.

Sitzungsber. k.-p. Akad. Wissensch., Berlin, Jahrg., 1888, pp. 1291-1295.

—— 1889 A

Die fossilen Pferde der Pampasformation, beschrieben von Dr. Hermann Burmeister, Director des Museo Nacional in Buenos Aires. Nachtrags-Bericht; Eine im Auftrage der National-Regierung für die Ausstellung zu Paris verfasste Monographie.

Buenos Aires, 1889, pp. i-vii; 1-65, with pls. ix-xii.

Printed in both Spanish and German. A supplement to Burmeister H., 1875 A.

Butts, Edward. 1891 A

Recently discovered footprints of the Amphibian age in the upper Coal-measure group of Kansas City, Mo.

Kansas City Scientist, v, pp. 17-19, with 4 figs. in the text.

Butts, Edward—Continued. 1891 B

Footprints of new species of amphibians in the upper Coal-measure group of Kansas City, Mo.

Kansas City Scientist, v, p. 44, with 2 figs. in the text.

"C. D." 1838 A

Bones of the mammoth.

Amer. Jour. Sci., xxxviii, p. 201.

Refers to finding of bones of mammoth in Rochester, N. Y

Calori, Luigi. 1894 A

Sulla composizione dei condili occipitali nelle varie classi di vertebrati e sull' omologia del terzo condilo occipitale dell' uomo con il condilo occipitale unico degli uccelli e dei rettili.

Memoirie della R. Accad. Sci. Inst. Bologna (5), iv, pp. 283-296, with pl.

Camper, Peter. 1788 A

Complementa varia Acad. Imper. Scient. Petropolitanæ communicanda, ad clar. ac celeb. Pallas.

Nova Acta Acad. Sci, Imp. Petropolitanæ, ii, pp. 250-264, with pls. viii, ix.

This paper is divided into the following heads: Præfatio, 250-252; De cranio bisontis fossili, 252-254; De bubalo giganteo, 254-257; De molaribus elephantorum giganteorum et eorum ossibus, 257-258; De dentibus Hippopotamorum giganteorum, 258; De alcibus giganteis Hiberniæ, 258-259; De ossibus mamonteis, 259-264.

Cannon, Geo. L., jr. 1888 A

On the Tertiary *Dinosauria* found in Denver beds.

Proc. Colorado Sci. Soc., iii, pp. 140-147.

See also "Informal Notes" on pp. 190 and 215 of same volume. These "Informal Notes" were published in 1889.

—— 1890 A

Identification of a Dinosaur from the Denver group.

Proc. Colorado Sci. Soc., iii, pp. 253-254.

Refers to the finding of *Ornithomimus velox*.

Capellini, Giovanni. 1884 A

Il chelonio veronese (*Protosphargis veronensis*, Cap.), scoperto nel 1852 nel cretaceo supèrio presso Sant' Anna di Alfaedo in Valpolicella.

Memorie R. Accad. Lincei (3), xviii, pp. 291-320, with pls. i-vi.

Carpenter, W. M. 1838 A

Interesting fossils found in Louisiana.

Amer. Jour. Sci., xxxiv, pp. 201-203, with 3 figs. of teeth of horse.

Carpenter, W. M.—Cont'd. 1839 A

Miscellaneous notices in Opelousas, Attakapas, etc.

Amer. Jour. Sci., xxxv, pp. 344–346.

—— 1846 A

Remarks on some fossil bones recently brought to New Orleans from Tennessee and from Texas.

Amer. Jour. Sci. (2), i, pp. 244–250, with 4 figs. in the text.

Carte, Alex., and **Macalister,** Alex. 1869 A

On the anatomy of *Balænoptera rostratus.*

Philosoph. Trans. Roy. Soc. Lond., clviii, pp. 201–261, with pls. iv–vii.

Carus, C. G. 1847 A

Resultate geologischer, anatomischer, and zoölogischer Untersuchungen über das unter dem Namen *Hydrarchos* von Dr. A. C. Koch nach Europa gebrachte und in Dresden aufgestellte grosse fossile Skelett, in Verbindung mit H. B. Geinitz, A. F. Günther, und H. G. L. Reichenbach herausgegeben.

Pp. 16, and 8 pls.; folio, Dresden and Leipzig, 1847.

—— 1849 A

Das Kopfskelet des *Zeuglodon hydrarchos.* Zum erstenmale nach einem vollständigen Exemplare beschrieben und abgebildet.

Nova Acta Acad. Cæs. Leop.-Carol. Nat. Cur., xxii, pp. 373–390, with pls. xxxix A and xxxix B.

Cary, Austin. 1892 A

A study in foot structure.

Jour. Morphology, vii, pp. 305–316, with pl. xviii, and 7 figs. in the text.

Case, E. C. 1897 A

Foramina perforating the cranial region of a Permian reptile and on a cast of its brain cavity.

Amer. Jour. Sci., (4) iii, pp. 321–326, with 4 figs. in the text.

A description of *Dimetrodon incisivus.*

—— 1897 B

On the osteology and relationships of *Protostega.*

Jour. Morphology, xiv, pp. 21–55, with pls. iv–vi.

—— 1898 A

The significance of certain changes in the temporal region of primitive *Reptilia.*

Amer. Naturalist, xxxii, pp. 69–74, with 2 figs. in the text.

Case, E. C.—Continued. 1898 B

The development and geological relations of the vertebrates. Part I, The fishes; Pt. II, Amphibia; Pt. III, Reptilia.

Jour. Geology, vi, pp. 393–416 (Fishes); pp. 500–523 (*Amphibia* and *Reptilia*).

—— 1899 A

A redescription of *Pariotichus incisivus* Cope.

Zoolog. Bulletin, ii, pp. 231–245, with 7 text-figs.

—— 1900 A

The vertebrates from the Permian bone bed of Vermilion County, Illincis.

Jour. Geology, viii, pp. 698–729, with pls. i–v.

The species of this paper were described by Cope, but few of them were figured. The original descriptions are reproduced and figures of many of them are given by Case. Several bones are figured without being identified. The species originally belonged to Gurley and are now owned by the University of Chicago.

—— See also **Baur** and **Case,** and **Williston** and **Case.**

Chadbourne, P. A. 1871 A

The discovery of the skull of a musk-ox in Utah.

Amer. Naturalist, v, pp. 315–316.

Extract from Salt Lake Tribune, May 16, 1871.

Chaloner, A. D. 1843 A

Fossil bones of mastodon and elephant.

Proc. Acad. Nat. Sci. Phila., i, pp. 321–322.

Chamberlin, Thomas C. 1900 A

On the habitat of the early vertebrates.

Jour. Geology, viii, pp. 400–412.

Champley, Robert. 1864 A

The great auk.

Ann. and Mag. Nat. Hist. (3), xiv, pp. 235–236.

Contains a list of the specimens of this bird and of its skeletons and eggs in the various museums of the world.

See also note by Dr. J. E. Gray, on p. 319; by Dr. P. L. Sclater, on p. 320; and on p. 393, by A. von Pelzeln, all of the same volume.

Chapman, E. J. 1858 A

Mastodon remains. Morpeth, Canada West.

Canadian Jour. Industry, Science, and Art (2), iii, pp. 356–357.

Announces finding of remains of *M. ohioticus* (?) at place named above.

Charlesworth, Edward. 1837 A

Notice of the teeth of *Carcharias megalodon* in the Red Crag of Suffolk.

Mag. Natural History (2), i, pp. 225–227, with text fig.

Charlesworth, Edward—C't'd. 1846 A

On the occurrence of the *Mosasaurus* in the Essex chalk, and on the discovery of flint within the pulp cavities of the teeth.

Report Brit. Assoc. Adv. Sci., 15th meeting, Cambridge, 1845, p. 60.

Denies propriety of establishing *Leiodon*.

Charlton, O. C. 1890 A

On the occurrence of mammoth remains in Franklin County, Kans.

Trans. Kansas Acad. Sci., xii, p. 74.

Cheney, T. A. 1872 A

The Chautauqua mastodon.

Amer. Naturalist, vi, pp. 178–179.

Christie, W. J. 1856 A

Extract from a letter regarding the finding of mastodon bones near Shell River, British America.

Proc. Nat. Hist. Soc. Boston, v, pp. 265–266.

Clark, J. W. 1871 A

On the skeleton of a Narwhal (*Monodon monoceros*).

Proc. Zool. Soc. Lond., 1871, pp. 42–53, with 2 figs.

Clark, W. B. 1895 A

Contributions to the Eocene fauna of the middle Atlantic slope.

Johns Hopkins University circulars, xv, pp. 3–6.

A list of the species found, among which are 10 vertebrates.

—— 1897 A

Eocene deposits of middle Atlantic slope.

Bull. U. S. Geol. Surv. No. 141, pp. i–vii; 1–167, pls. i–xi.

Descriptions of vertebrates, pp. 58–63, pls. vii, viii.

Clarke, John M. 1885 A

On the higher Devonian faunas of Ontario County, N. Y.

Bull. U. S. Geol. Surv., No. 16, pp. 1–80, pls. i–iii.

In this Bulletin are described the four new species of fishes *Dinichthys newberryi*, *Palæoniscus devonicus*, *Acanthodes ? pristis*, and *Pristacanthus vetustus*.

—— 1894 A

New or rare species of fossils from the horizons of the Livonia salt shaft.

Report State Geol. New York for 1893, ii, pp. 162–168, with pl. i and 3 figs. in the text.

Description and figures of *Coccosteus ? halmodeus*.

—— 1897 A

The stratigraphic and faunal relations of the Oneonta sandstones and shales, the Ithaca and Portage groups in central New York.

Fifteenth Ann. Rep. State Geologist, for the year 1895, vol. i, pp. 31–81.

This paper appeared also in the 49th Ann. Report of the N. Y. State Museum.

Names *Dinichthys newberryi*, *Acanthodes priscus*, and *Palæoniscus devonicus* as occurring in the Portage group.

Clarke, S. F. 1891 A

Embryology of the alligator.

Jour. Morphology, v, pp. 181–206, with pls. ix–xiii.

Claudius, ——. 1867 A

Das Gehörorgan von *Rhytina stelleri*.

Mém. Acad. Imp. Sci. St. Pétersburg (7), xi, No. 5, pp. 1–14, with pls. i–iii.

Claypole, E. W. 1883 A

Note on a large fish plate from the Upper Chemung ? of northern Pennsylvania.

Proc. Amer. Philos. Soc., xx, pp. 664–666, with fig.

Describes and figures *Pterichthys rugosus*.

—— 1884 A

Preliminary note on some fossil fishes recently discovered in the Silurian rocks of North America.

Amer. Naturalist, xviii, pp. 1222–1226.

New genus and species *Palæaspis americana* and *P. bitruncata*.

—— 1884 B

On some remains of fish from the Upper Silurian rocks of Pennsylvania.

The Geolog. Magazine (3), i, pp. 519–521.

—— 1885 A

On some fish remains recently discovered in the Silurian rocks of Pennsylvania.

Proc. Amer. Assoc. Adv. Sci., 33d meeting, Phila., 1884, pp. 424–428.

Abstract of paper presented.

—— 1885 B

On *Ctenacanthus* and *Gyracanthus* from the Chemung of Pennsylvania.

Proc. Amer. Assoc. Adv. Sci., 33d meeting, Phila., 1884, pp. 489–490. Abstract.

—— 1885 C

On some remains of fish from the Upper Silurian rocks of Pennsylvania.

Report Brit. Assoc. Adv. Sci., 54th meeting, Montreal, 1884, pp. 733–734.

—— 1885 D

On the recent discovery of Pteraspidian fish in the Upper Silurian rocks of North America.

Quart. Jour. Geol. Soc., xli, pp. 48–64, with 8 figs. in the text.

Claypole, E. W.—Continued. 1888 A

A letter concerning the collection of fossil fishes made at Berea, Ohio, by Dr. Wm. Clark.

Amer. Geologist, ii, pp. 62-64.

—— 1890 A

Palæontological notes from Indianapolis (A. A. A. S.), *Pterichthys*, *Castoroides*, etc.

Amer. Geologist, vi, pp. 255-260.

—— 1891 A

Megalonyx in Holmes County, Ohio.

Amer. Geologist, vii, pp. 122-132; 149-153.

—— 1892 A

A new gigantic Placoderm from Ohio.

Amer. Geologist, x, pp. 1-4, with 1 fig. in the text.

Describes *Gorgonichthys clarki*.

—— 1892 B

Dentition of *Titanichthys* and its allies.

Amer. Geologist, x, p. 193.

Abstract of paper read before the Geological Society of America, 1892.

—— 1892 C

The head of *Dinichthys*.

Amer. Geologist, x, pp. 199-207, with pls. vi-viii.

—— 1892 D

On the structure of the American Pteraspidian, *Palæaspis* (Claypole), with remarks on the family.

Quart. Jour. Geol. Soc., xlviii, pp. 542-561, with 8 figs. in the text.

—— 1893 A

A new Coccostean—*Coccosteus cuyahogæ*.

Amer. Geologist, xi, pp. 167-171, with 2 figs. in the text.

—— 1893 B

The Cladodont sharks of the Cleveland shale.

Amer. Geologist, xi, pp. 325-331, with pls. vii, viii.

—— 1893 C

Fins of *Palæaspis americana*.

Amer. Naturalist, xxvii, pp. 375-376.

Extract from paper in Quarterly Jour. Geol. Soc., 1892.

—— 1893 D

The upper Devonian fishes of Ohio.

The Geol. Magazine (3), x, pp. 443-448, with 2 figs. in the text.

—— 1893 E

The three great fossil Placoderms of Ohio.

Amer. Geologist, xii, pp. 89-99.

A popular description of *Dinichthys*, *Titanichthys*, and *Gorgonichthys*.

Claypole, E. W.—Continued. 1893 F

On three new species of *Dinichthys*.

Amer. Geologist, xii, pp. 275-279, with pl. xii, and 1 fig. in the text.

Descriptions of *D. lincolni*, *D. clarki*, and *D. gracilis*.

—— 1893 G

The fossil fishes of Ohio.

Report Geol. Surv. of Ohio, vii, pp. 602-619, with pls. xxxviii-xliii.

—— 1894 A

Cladodus ? magnificus, a new Selachian.

Amer. Geologist, xiv, pp. 137-140, with pl. v.

—— 1894 B

On a new Placoderm, *Brontichthys clarki*, from the Cleveland shale.

Amer. Geologist, xiv, pp. 379-380, with pl. xii.

—— 1894 C

Structure of the bone of *Dinichthys*.

Proc. Amer. Micros. Soc., xv, pp. 189-191, with 5 figs. in the text.

—— 1895 A

On a new specimen of *Cladodus clarki*.

Amer. Geologist, xv, pp. 1-7, pls. i, ii.

—— 1895 B

The Shaw mastodons.

Amer. Geologist, xv, pp. 325-326.

Notes the discovery of three individuals of the mastodon at Cincinnati, Ohio. Two of these possessed two lower incisors.

—— 1895 C

Recent contributions to knowledge of the Cladodont sharks.

Amer. Geologist, xv, pp. 363-368.

—— 1895 D

The Cladodonts of the upper Devonian of Ohio.

The Geolog. Magazine (4), ii, p. 473.

See also Report Brit. Assoc. Adv. Sci., 1895, p. 694.

—— 1895 E

The great Devonian Placoderms of Ohio.

The Geol. Magazine (4), ii, pp. 473-474.

See also Report Brit. Assoc. Adv. Sci., 1895, p. 695.

—— 1895 F

Actinophorous clarki Newb.

Amer. Geologist, xvi, pp. 20-25, pl. ii.

—— 1895 G

The oldest vertebrate fossil.

Nature, lii, p. 55.

This distinction is awarded to *Onchus clintoni*.

—— 1895 H

On the structure of the teeth of the Devonian Cladodont sharks.

Proc. Amer. Micros. Soc., xvi, pp. 191-195, with pls. i-iv, containing 7 figs.

Claypole, E. W.—Continued. 1896 A

A new *Titanichthys.*

Amer. Geologist, xvii, pp. 166–169, with pl. x.

Description and figs. of portions of a new species, *T. brevis.*

—— 1896 B

The ancestry of the Upper Devonian Placoderms of Ohio.

Amer. Geologist, xvii, pp. 349–360.

—— 1896 C

Dinichthys prentis-clarki.

Amer. Geologist, xviii, pp. 199–201, with pl. vii.

—— 1896 D

On the teeth of *Mazodus.*

Trans. Amer. Micros. Soc., xviii, pp. 146–148, with pl. of 2 figs.

—— 1896 E

On the structure of some Paleozoic spines from Ohio.

Trans. Amer. Micros. Soc., xviii, pp. 151–154, with pl. of 2 figs.

—— 1897 A

Man and the *Megalonyx.*

Amer. Geologist, xx, pp. 52–54.

Clift, William. 1835 A

Some account of the remains of the *Megatherium* sent to England from Buenos Ayres, by Woodbine Parish, jr., esq., F. G. S., F. R. S.

Trans. Geol. Soc. Lond. (2), iii, pp. 437–450.

Cocchi, Igino. 1864 A

Monografia dei *Pharyngodopilidæ,* nuova famiglia di pesci labroidi. Studi paleontologica.

Firenze, 1864, pp. 1–88, pls. ia–va.

Coles, Henry. 1853 A

On the skin of the *Ichthyosaurus.*

Quart. Jour. Geol. Soc. Lond., ix, pp. 79–82, with pl. v.

Collett, John. 1882 A

Recent extinction of the mastodon.

Amer. Naturalist, xvi, pp. 74–75.

Taken from Geological Report of Indiana for 1880.

Collinge, Walter E. 1893 A

The morphology of the sensory canal system in some fossil fishes.

Proc. Birmingham Philos. Soc., ix, pt. 1. Reprint, pp. 1–14, with pls. i, ii.

—— 1895 A

The presence of scales in the integument of *Polyodon folium.*

Jour. Anat. and Physiol., xxix, pp. 485–487, with 2 figs. in the text.

Conrad, T. A. 1840 A

On the geognostic position of the *Zeuglodon,* or *Basilosaurus* of Harlan.

Amer. Jour. Sci. (1), xxxviii, pp. 381–382.

—— 1869 A

Notes on American fossiliferous strata.

Amer. Jour. Sci. (2), xlvii, pp. 358–364.

—— 1871 A

On some points connected with the Cretaceous and Tertiary of North Carolina.

Amer. Jour. Sci. (3), i, pp. 468–469.

Conybeare, William D. 1824 A

Additional notices on the fossil genera *Ichthyosaurus* and *Plesiosaurus.*

Trans. Geol. Soc. Lond. (2), i, pp. 103–123, with pls. xv–xxii.

Cook, Geo. H. 1885 A

Annual report of the State geologist for 1885.

Pp. 1–228.

On page 96 there is a list of 8 species of fossil tracks which have been found in New Jersey.

Cooper, J. Hamilton. 1843 A

On fossil bones found in digging the New Brunswick canal in Georgia.

Proc. Geol. Soc., Lond., iv, pp. 33–34.

Cooper, William. 1824 A

On the remains of the *Megatherium* recently discovered in Georgia.

Annals Lyc. Nat. Hist. of N. Y., i, pp. 114–124, pl. viii.

—— 1828 A

Further discovery of fossil bones in Georgia, and remarks on their identity with those of the *Megatherium* of Paraguay.

Annals Lyc. Nat. Hist. of N. Y., ii, pp. 267–270.

Abstract in Edinb. New Philos. Jour. 1828, v, pp. 327–329.

—— 1831 A

Notices of Big Bone Lick.

Monthly Amer. Jour. of Geol. and Nat. Sci., i, pp. 158–174; 205–217.

—— 1833 A

A report on some fossil bones of the *Megalonyx* from Virginia, with a notice of such parts of the skeleton of this animal as have been hitherto discovered, and remarks on the affinities which they indicate.

Annals Lyc. Nat. Hist. N. Y., iii, pp. 166–173.

Cooper, William, **Smith,** J. A., and **DeKay,** J. E. 1831 A

Report of Messrs. Cooper, J. A. Smith, and DeKay to the Lyceum of Natural History on a collection of fossil bones disinterred at Big Bone Lick, Kentucky, in September, 1830, and recently brought to New York.

Reprinted in Edinburgh New Philos. Journal, xi, pp. 352–355, 1831, Amer. Jour. Sci., xx, pp. 370–372, and Monthly Amer. Jour. Geol., i. pp. 43–44.

Cope, E. D. 1864 A

On the characters of the higher groups of *Reptilia Squamata*, and especially of the *Diploglossa*.

Proc. Acad. Nat. Sci. Phila., 1864, pp. 224–231.

—— 1865 A

On *Amphibamus grandiceps*, a new batrachian from the Coal-measures.

Proc. Acad. Nat. Sci. Phila., 1865, pp. 134–137.

—— 1866 A

On the discovery of the remains of a gigantic Dinosaur in the Cretaceous of New Jersey.

Proc. Acad. Nat. Sci. Phila., 1866, pp. 275–279.

—— 1866 B

On the discovery of the remains of a gigantic Dinosaur in the Cretaceous of New Jersey.

Amer. Jour. Sci. (2), xlii, p. 425. Abstract from Proc. Phila. Acad., 1866, pp. 275–279.

Same as preceding.

—— 1866 C

Supplement to the description of vertebrates.

Geol. Surv. Illinois, A. H. Worthen, director, ii, pp. 135–141, pl. xxxii, and 1 woodcut.

This paper is supplementary to "Newberry and Worthen, 1866 A."

—— 1866 D

Observations on extinct vertebrates of the Mesozoic red sandstone.

Proc. Acad. Nat. Sci. Phila., 1866, pp. 249–250.

Remarks on *Rhytidodon*, *Clepsisaurus*, and *Mastodonsaurus durus*.

—— 1866 E

[Remarks on *Lælaps*.]

Proc. Acad. Nat. Sci. Phila., pp. 316–317.

—— 1866 F

On the structures and distribution of the genera of the arciferous *Anura*.

Jour. Acad. Nat. Sci. Phila. (2), vi, pp. 67–112, pl. 25.

Cope, E. D.—Continued. 1866 G

Communication in regard to the Mesozoic sandstone of Pennsylvania.

Proc. Acad. Nat. Sci. Phila., 1866, p. 290.

Notes the finding of *Pterodactylus longispinis*, afterwards described as *Rhabdopelix longispinis*.

—— 1866 H

Third contribution to the history of the *Balænidæ* and *Delphinidæ*.

Proc. Acad. Nat. Sci. Phila., xviii, pp. 293–300.

In this paper Harlan's *Delphinus calvertensis* is assigned to *Pontoporia*.

—— 1867 A

On *Euclastes*, a genus of extinct *Cheloniidæ*.

Proc. Acad. Nat. Sci. Phila., pp. 39–42.

—— 1867 B

[Descriptions of *Eschrichtius cephalus*, *Rhabdosteus latiradix*, *Squalodon atlanticus*, and *S. mento*.]

Proc. Acad. Nat. Sci. Phila., 1867, pp. 131–132.

—— 1867 C

An addition to the vertebrate fauna of the Miocene period, with a synopsis of the extinct *Cetacea* of the United States.

Proc. Acad. Nat. Sci. Phila., 1867, pp. 138–156.

Species collected in Charles County, Md.

—— 1867 D

[Account of extinct reptiles which approach birds.]

Proc. Acad. Nat. Sci. Phila., 1867, pp. 234–235.

—— 1867 E

The fossil reptiles of New Jersey.

Amer. Naturalist, i, pp. 23–30.

—— 1868 A

On a new large Enaliosaur.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 92–93.

Describes *Elasmosaurus platyurus*.

—— 1868 B

On the origin of genera.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 242–300.

—— 1868 C

On the genus *Lælaps*.

Amer. Jour. Sci. (2), xlvi, pp. 415–417.

—— 1868 D

Note on the fossil reptiles near Fort Wallace.

Page 68 of John L. Le Conte's "Notes on the geology of the survey for the extension of the Union Pacific Railway, E. D., from the Smoky Hill River, Kansas, to the Rio Grande," Philadelphia, Feb., 1868.

Contains description of *Elasmosaurus platyurus* and mention of *Discosaurus carinatus* Cope.

Cope, E. D.—Continued. 1868 E

[Description of new genus and species of *Cheloniidæ*, *Osteopygis emarginatus*.]

Proc. Acad. Nat. Sci. Phila., 1868, p. 147.

—— 1868 F

[Remarks on *Palæophis littoralis* Cope.]

Proc. Acad. Nat. Sci. Phila., 1868, p. 147.

—— 1868 G

[Remarks on extinct *Cetacea* from the Miocene of Maryland.]

Proc. Acad. Nat. Sci. Phila., 1868, pp. 159, 160.

—— 1868 H

[Remarks on *Clidastes iguanavus*, *Nectoportheus validus*, and *Elasmosaurus*.]

Proc. Acad. Nat. Sci. Phila., 1868, p. 181.

—— 1868 I

Second contribution to the history of the *Vertebrata* of the Miocene period of the United States.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 184–194.

—— 1868 J

Synopsis of the extinct *Batrachia* of North America.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 208–221.

—— 1868 K

On some Cretaceous *Reptilia*.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 233–242.

—— 1868 L

On the origin of genera.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 242–300.

—— 1868 M

[Observations on some extinct reptiles.]

Proc. Acad. Nat. Sci. Phila., 1868, p. 313.

—— 1869 A

On the reptilian orders *Pythonomorpha* and *Streptosauria*.

Proc. Boston Soc. Nat. Hist., xii, pp. 250–266.

—— 1869 B

Synopsis of the extinct *Reptilia* found in the Mesozoic and Tertiary strata of New Jersey.

Appendix B of Geology of New Jersey, George H. Cook, State geologist, Newark, 1868, pp. 733–742.

The letter of the State geologist to the governor (page v.) shows that this volume could not have been issued before 1869.

—— 1869 C

[Remarks on fossil reptiles.]

Proc. Amer. Philos. Soc., xi, p. 16.

Cope, E. D.—Continued. 1869 D

[Remarks on fossil reptiles, *Clidastes propython*, *Polycotylus latipinnis*, *Ornithotarsus immanis*.]

Proc. Amer. Philos. Soc., xi, p. 117.

Reprint in Amer. Jour. Sci. (2), xlviii, p. 278.

Noticed in The Geolog. Magazine, vol. vi, (1869), p. 476, and vol. vii (1870), p. 427.

—— 1869 E

Synopsis of the extinct *Mammalia* of the cave formations in the United States, with observations on some *Myriopoda* found in and near the same, and on some extinct mammals of the caves of Anguilla, W. I., and of other localities.

Proc. Amer. Philos. Soc., xi, pp. 171–192, with pls. iii–v.

Noticed in Jour. de Zoologie, i, pp. 168–169.

—— 1869 F

Second addition to the history of the fishes of the Cretaceous of the United States.

Proc. Amer. Philos. Soc., xi, pp. 240–244.

—— 1869 G

Third contribution to the fauna of the Miocene period of the United States.

Proc. Acad. Nat. Sci. Phila., 1869, pp. 6–12.

—— 1869 H

[Remarks on *Holops brevispinus*, *Ornithotarsus immanis*, and *Macrosaurus proriger*.]

Proc. Acad. Nat. Sci. Phila., 1869, p. 123.

—— 1869 I

[Remarks on *Eschrichtius polyporus*, *Hypsibema crassicauda*, *Hadrosaurus tripos*, and *Polydectes biturgidus*.]

Proc. Acad. Nat. Sci. Phila., 1869, p. 192.

—— 1869 J

Remarks on fossils from limestone caves in Virginia.

Proc. Acad. Nat. Sci. Phila., 1869, p. 3.

—— 1869 K

The fossil reptiles of New Jersey.

Amer. Naturalist, iii, pp. 84–91, pl. ii; continued from Amer. Naturalist, i, p. 30.

—— 1869 L

Description of some extinct fishes previously unknown.

Proc. Boston Soc. Nat. Hist., xii, pp. 310–317.

Cope, E. D.—Continued. 1869 M

Synopsis of the extinct *Batrachia*, *Reptilia*, and *Aves* of North America.

Trans. Amer. Phil. Soc., xiv, pp. i-viii, 1-252, with pls. i-xiv, and 55 woodcuts in the text.

A synopsis appeared in Jour. de Zoologie, i, pp. 182-187, 381-387, 508-510, with pls. xi. Of this memoir only pp. 1-104 were issued in the year 1869; pp. 105-234 appeared in April, 1870, while the remainder was issued in December, 1870. The imprint of the volume is December, 1871.

—— 1869 N

Synopsis of the extinct *Mammalia* of New Jersey.

Appendix C of Geology of New Jersey, George H. Cook, State geologist, Newark, 1868, pp. 739-742.

See remark under Cope, 1869, B.

—— 1869 O

On two new genera of extinct *Cetacea*.

Canadian Naturalist, iv, pp. 320-321.

Only *Anoplonassa forcipata* is described in this extract from a Boston newspaper.

—— 1870 A

On the *Megadactylus polyzelus* of Hitchcock.

Amer. Jour. Sci. (2), xlix, pp. 390-392.

Extract from Cope's "Extinct Reptilia and Aves." Reprinted in Ann. and Mag. Nat. Hist. (4), vol. v, pp. 454-455.

—— 1870 B

On *Elasmosaurus platyurus*.

Amer. Jour. Sci. (2), l, pp. 140-141.

—— 1870 C

Additional note on *Elasmosaurus*.

Amer. Jour. Sci. (2), l, pp. 268-269.

—— 1870 D

On some *Reptilia* of the Cretaceous formation of the United States.

Proc. Amer. Philos. Soc., xi, pp. 271-274.

—— 1870 E

Verbal communication [at meeting of the Amer. Philos. Soc., Feb. 18, 1870.]

Proc. Amer. Philos. Soc., xi, p. 274.

—— 1870 F

Fourth contribution to the history of the fauna of the Miocene and Eocene periods of the United States.

Proc. Amer. Philos. Soc., xi, pp. 285-294.

—— 1870 G

On *Adocus*, a genus of Cretaceous *Emydidæ*.

Proc. Amer. Philos. Soc., xi, pp. 295-298.

Cope, E. D.—Continued. 1870 H

Observations on the fishes of the Tertiary shales of Green River, Wyoming Territory.

Proc. Amer. Philos. Soc., xi, pp. 380-384.

—— 1870 I

Observations on the *Reptilia* of the Triassic formations of the Atlantic regions of the United States.

Proc. Amer. Philos. Soc., xi, pp. 444-446.

Reprinted in Ann. Mag. Nat. Hist., 1870, vi, pp. 498-500.

—— 1870 J

[Statements communicated regarding *Liodon perlatus*.]

Proc. Amer. Philos. Soc., xi, pp. 497-498.

—— 1870 K

[Remarks on *Adocus syntheticus* and *Lælaps aquilunguis*.]

Proc. Amer. Philos. Soc., xi, p. 515.

—— 1870 L

On the *Saurodontidæ*.

Proc. Amer. Philos. Soc., xi, pp. 529-538.

Abstract of in Amer. Naturalist, iv, p. 695.

—— 1870 M

On the fishes of a fresh-water Tertiary in Idaho, discovered by Capt. Clarence King.

Proc. Amer. Philos. Soc., xi, pp. 538-547.

—— 1870 N

On the *Adocidæ*.

Proc. Amer. Philos. Soc., xi, pp. 547-553.

—— 1870 O

On some species of *Pythonomorpha* from the Cretaceous beds of Kansas and New Mexico.

Proc. Amer. Philos. Soc., xi, pp. 574-584.

—— 1870 P

Note on *Saurocephalus*, Harlan.

Proc. Amer. Philos. Soc., xi, p. 608.

Abstract in Amer. Jour. Sci. (3), i, p. 386, 1871.

—— 1870 Q

[Observations on fossil reptiles from Kansas.]

Proc. Acad. Nat. Sci. Phila., 1870, p. 132.

—— 1870 R

Discovery of a huge whale in North Carolina.

Amer. Naturalist, iv, p. 128.

—— 1870 S

Reptilia of the Triassic formations of the United States.

Amer. Naturalist, iv, pp. 562-563.

Cope, E. D.—Continued. 1870 T

Review of G. A. Maack's "Die bis jetzt bekannten Schildkröten u. d. bei Kelheim u. Hannover neu aufgefundenen ältesten Arten derselben."

Amer. Jour. Science (2) l. pp. 136–139.

This paper contains a list of species of American turtles known at that date.

—— 1871 A

[Remarks on new fossil reptiles from western Kansas.]

Proc. Acad. Nat. Sci. Phila., 1871, pp. 297–298.

Names are given of certain fossils, but no adequate descriptions.

—— 1871 B

On the homologies of some of the cranial bones of the *Reptilia*, and on the systematic arrangement of the class.

Proc. Amer. Assoc. Adv. Science, 19th meeting, Troy, 1870, pp. 194–247, with 24 figs. in text.

Notice of in Ann. and Mag. Nat. Hist. (4), vol. vii, pp. 67–68.

—— 1871 C

On the extinct tortoises of the Cretaceous of New Jersey.

Amer. Naturalist, v, pp. 562–564.

—— 1871 D

On the fossil reptiles and fishes of the Cretaceous rocks of Kansas.

U. S. Geol. Surv. of Wyoming and portions of contiguous Territories, 2d [4th] annual report, F. V. Hayden, U. S. Geologist, Washington, 1871, pp. 385–424.

—— 1871 E

On the fishes of the Tertiary shales of Green River, Wyoming Territory.

U. S. Geol. Surv. of Wyoming and portions of contiguous Territories for 1870, 2d [4th] annual report, F. V. Hayden, U. S. Geologist, pp. 425–431.

—— 1871 F

The Port Kennedy bone cavern.

Proc. Amer. Philos. Soc., xi, p. 15.

—— 1871 G

Supplement to the "Synopsis of the extinct *Batrachia* and *Reptilia* of North America."

Proc. Amer. Philos. Soc., xii, pp. 41–52.

—— 1871 H

On the occurrence of fossil *Cobitidæ* in Idaho.

Proc. Amer. Philos. Soc., xii, p. 55.

Discusses position of the genus *Diastichus*, which was afterwards put among the *Cyprinidæ*.

Cope, E. D.—Continued. 1871 I

Preliminary report on the *Vertebrata* discovered in the Port Kennedy bone cave.

Proc. Amer. Philos. Soc., xii, pp. 73–102, with 20 figs. in the text.

—— 1871 J

Note of some Cretaceous *Vertebrata* in the State Agricultural College of Kansas, U. S. A.

Proc. Amer. Philos. Soc., xii, pp. 168–170.

—— 1871 K

[Letter to Professor Lesley giving an account of a journey in the valley of the Smoky Hill River, in Kansas.]

Proc. Amer. Philos. Soc., xii, pp. 174–176.

—— 1871 L

Observations on the extinct Batrachian fauna of the Carboniferous of Linton, Ohio.

Proc. Amer. Philos. Soc., xii, p. 177.

—— 1871 M

Observations on the distribution of certain extinct *Vertebrata* in North Carolina.

Proc. Amer. Philos. Soc., xii, pp. 210–216.

—— 1871 N

Catalogue of the *Pythonomorpha* found in the Cretaceous strata of Kansas.

Proc. Amer. Philos. Soc., xii, pp. 264–287.

—— 1871 O

[Observations on *Sauropleura remex* and *Œstocephalus amphiuminus.*]

Proc. Acad. Nat. Sci. Phila., 1871, p. 53.

—— 1871 P

Cave mammals in Pennsylvania.

Amer. Naturalist, v, p. 58.

Refers to the finding of bones in Port Kennedy cave.

—— 1872 A

Bathmodon, a new genus of fossil mammals.

Amer. Jour. Sci. (3), iii, p. 224.

Relative to paper read before Amer. Philos. Soc. (Cope, E. D., 1872 J.), correcting date.

—— 1872 B

Synopsis of the species of *Chelydrinæ*.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 22–29.

—— 1872 C

Observations on the systematic relations of the fishes.

Proc. Amer. Assoc. Adv. Science, 20th meeting, Indianapolis, 1871, pp. 317–343.

See also Amer. Naturalist, v. pp. 579–593; Ann. and Mag. Nat. Hist. (4), ix, pp. 155–168; Trans. Amer. Philos. Soc., xiv, pp. 445–461.

Cope, E. D.—Continued. 1872 D

On the extinct tortoises of the Cretaceous of New Jersey.

Proc. Amer. Assoc. Adv. Science, 20th meeting, Indianapolis, 1871, pp. 344–345.

Abstract of Cope, 1871 D.

—— 1872 E

Third account of new *Vertebrata* from the Bridger Eocene of Wyoming Territory.

Proc. Amer. Philos. Soc., xii, pp. 469–472 (1873).

Issued Aug. 7, 1872, as Pal. Bull. No. 3; reprinted in Proc. Amer. Philos. Soc., Jan., 1873.

—— 1872 F

On the geology and palæontology of the Cretaceous strata of Kansas.

U. S. Geol. Surv. of Montana and portions of adjacent Territories; 5th annual report, F. V. Hayden, U. S. Geologist, Washington, D. C., 1872, pp. 318–349.

—— 1872 G

On the vertebrate fossils of the Wasatch strata.

U. S. Geol. Surv. of Montana and portions of adjacent Territories; 5th annual report, F. V. Hayden, U. S. Geologist, Washington, 1872; pp. 350–353.

—— 1872 H

On a new Testudinate from the chalk of Kansas.

Proc. Amer. Philos. Soc., xii, pp. 308–310.

Describes *Cynocercus incisivus.*

—— 1872 I

On the families of fishes of the Cretaceous formation in Kansas.

Proc. Amer. Philos. Soc., xii, pp. 327–357.

—— 1872 J

On *Bathmodon*, an extinct genus of ungulates.

Proc. Amer. Philos. Soc., vii, pp. 417–420.

—— 1872 K

On two new Ornithosaurians from Kansas.

Proc. Amer. Philos. Soc., xii, pp. 420–422.

Ornithochirus umbrosus and *O. harpyia* are described.

—— 1872 L

A description of the genus *Protostega*, a form of extinct *Testudinata.*

Proc. Amer. Philos. Soc., xii, pp. 422–433.

—— 1872 M

Description of some new *Vertebrata* from the Bridger group of the Eocene.

Proc. Amer. Philos. Soc., xii, pp. 460–465.

Issued as Pal. Bull. No. 1, July 29, 1872; reprinted in Proc. Amer. Phil. Soc., January, 1873.

Cope, E. D.—Continued. 1872 N

Second account of new *Vertebrata* from the Bridger Eocene.

Proc. Amer. Philos. Soc., xii, pp. 466–468.

This forms Pal. Bull. No. 2, and was issued Aug. 3, 1872; reprinted in Proc. Amer. Philos. Soc., 1873, January (See Cope, 1873 V).

—— 1872 O

On a new genus of *Pleurodira* from the Eocene of Wyoming.

Proc. Amer. Philos. Soc., xii, pp. 472–477.

Besides the new genus of Pleurodiran turtle *Notomorpha*, with 3 species, Cope here describes the perissodactyle *Notharctus vasacciensis.*

—— 1872 P

On the Tertiary coal and fossils of Osino, Nevada.

Proc. Amer. Philos. Soc., xii, pp. 478–481.

—— 1872 Q

On the existence of *Dinosauria* in the transition beds of Wyoming.

Proc. Amer. Philos. Soc., xii, pp. 481–483 (1873).

This forms Pal. Bull. No. 4, published Aug. 12, 1872; reprinted in Amer. Philos. Soc. Proc., Jan., 1873.

—— 1872 R

Notices of new *Vertebrata* from the upper waters of Bitter Creek, Wyoming Territory.

Proc. Amer. Philos. Soc., xii, pp. 483–486 (1873).

This forms Pal. Bull. No. 6, published Aug. 20, 1872; reprinted Jan., 1873, in Proc. Amer. Philos. Soc. (See Cope, 1873 V.)

—— 1872 S

Second notice of extinct vertebrates from Bitter Creek, Wyoming.

Proc. Amer. Philos. Soc., xii, pp. 487–488 (1873).

Published in part Aug. 22, 1872, as Pal. Bull. No. 7; reprinted in Proc. Amer. Philos. Soc., Jan., 1873. (See Cope, 1873 V.) The description of *Anaptomorphus æmulus* forms Pal. Bull. No. 8, Oct., 1872, *fide* Cope, 1873 V.

—— 1872 T

On the dentition of *Metalophodon.*

Proc. Amer. Philos. Soc., xii, pp. 542–545.

—— 1872 U

On a new vertebrate genus from the northern part of the Tertiary basin of Green River.

Proc. Amer. Philos. Soc., xii, p. 554.

Issued also as Pal. Bull. No. 8, Oct. 12, 1872.

Describes *Anaptomorphus æmulus.*

—— 1872 V

Descriptions of new extinct reptiles from the upper Green River Eocene basin, Wyoming.

Proc. Amer. Philos. Soc., xii, pp. 554–555 (1873).

This constitutes Pal. Bull. No. 9, published Oct., 1872; reprinted Jan., 1873, *fide* Cope, 1873 V.

Cope, E. D.—Continued. 1872 W

Telegram describing extinct proboscidians from Wyoming.

Palæontological Bull. No. 5.

With conjectural corrections of specific names. Published Aug. 1, 1872, *fide* Cope, 1873 V. Reprinted, with corrections, in Proc. Amer. Philos. Soc., xii, p. 580. (Cope, E. D., 1872 II.)

—— 1872 X

[Description of *Holops pneumaticus*.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 11–12.

—— 1872 Y

List of the *Reptilia* of the Eocene formation of New Jersey.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 14–18.

—— 1872 Z

On an extinct whale from California.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 29–30.

Describes *Eschrichtius davidsonii*.

—— 1872 AA

[Description of *Bathmodon radians*.]

Proc. Acad. Nat. Sci. Phila., 1872, p. 38.

Reprinted in Amer. Jour. Sci. (3), iv, pp. 238–239; Amer. Naturalist, vi, p. 438.

—— 1872 BB

[Description of *Plesiosaurus gulo* and of the turtle afterwards named *Toxochelys latiremis*.]

Proc. Acad. Nat. Sci. Phila., 1872, pp. 127–129.

—— 1872 CC

[Remarks on discoveries recently made by Prof. O. C. Marsh.]

Proc. Acad. Nat. Sci. Phila., 1872, pp. 140–141.

—— 1872 DD

Remarks on *Mastodon* from New Mexico.

Proc. Acad. Nat. Sci. Phila., 1872, p. 142.

—— 1872 EE

Remarks on geology of Wyoming, and on saurodont fishes from Kansas.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 279–281.

—— 1872 FF

The geological age of the coal of Wyoming.

Amer. Naturalist, vi, pp. 669–671.

—— 1872 GG

Food of *Plesiosaurus*.

Amer. Naturalist, vi, p. 439.

—— 1872 HH

The Eocene genus *Synoplotherium*.

Amer. Naturalist, vi, p. 695.

—— 1872 II

Notice of new proboscidians from the Eocene of southern Wyoming.

Proc. Amer. Philos. Soc., xii, p. 580 (1873).

Followed by a note of the secretary, correcting errors in the original, which was issued as Pal. Bull. No. 5. (Cope, E. D., 1872 W.)

Cope, E. D.—Continued 1872 JJ

Carboniferous reptiles of Ohio.

Amer. Naturalist, vi, p. 46.

—— 1872 KK

The proboscidians of the American Eocene.

Amer. Naturalist, vi, pp. 773–774.

The group of which *Eobasileus cornutus* is type.

—— 1872 LL

The armed *Metalophodon*.

Amer. Naturalist, vi, pp. 774–775.

Describes *M. armatus*.

—— 1872 MM

The fish-beds of Osino, Nevada.

Amer. Naturalist, vi, pp. 775–776.

Refers to *Amyzon mentale* and *Trichophanes hians*.

—— 1873 A

Note on the Cretaceous of Wyoming.

Amer. Jour. Sci. (3), v, pp. 230–231.

Slip from the "Proc. Phil. Soc., Philadelphia," published on Feb. 7. Followed by remarks by "Eds." The original not found in the Proc. Amer. Philos. Soc., Phila.

—— 1873 B

On the new perissodactyles from the Bridger Eocene.

Proc. Amer. Philos. Soc., xiii, pp. 35–36.

Also issued as Pal. Bull. No. 11.

—— 1873 C

On some new extinct *Mammalia* from the Tertiary of the Plains.

Palæont. Bulletin No. 14, pp. 1–2.

Describes *Ælurodon mustelinus* and *Accrotherium megalodus*.

—— 1873 D

Fourth notice of extinct *Vertebrata* from the Bridger and the Green River Tertiaries.

Palæont. Bulletin No. 17, pp. 1–4. "Oct. 25, 1873." (Cope.)

—— 1873 E

On the extinct *Vertebrata* of the Eocene of Wyoming, observed by the expedition of 1872, with notes on the geology.

U. S. Geol. Surv. Terr. for 1872, 6th annual report, F. V. Hayden, U. S. Geologist, Washington, D. C., 1873, pp. 545–649, pls. i–vi.

—— 1873 F

On the short-footed *Ungulata* of the Eocene of Wyoming.

Proc. Amer. Philos. Soc., xiii, pp. 38–74.

For extract see Jour. de Zoologie, ii, 1873, pp. 168–184, pl. vii, followed by remarks by Paul Gervais.

—— 1873 G

On the flat-clawed *Carnivora* of the Eocene of Wyoming.

Proc. Amer. Philos. Soc., xiii, pp. 198–200.

Cope, E. D.—Continued. 1873 H

On the osteology of the extinct tapiroid *Hyrachyus*.

Proc. Am. Philos. Soc., xiii, pp. 212–224.

—— 1873 I

[Remarks on additional specimens of *Toxochelys latiremis*.]

Proc. Acad. Nat. Sci. Phila., 1873, p. 10.

—— 1873 J

Observations on the structure and systematic position of the genus *Basileus* Cope.

Proc. Acad. Nat. Sci. Phila., 1873, pp. 10–12.

—— 1873 K

[Remarks on *Eobasilidæ* and *Bathmodontidæ*.]

Proc. Acad. Nat. Sci. Phila., 1873, p. 102.

—— 1873 L

[Remarks on a fossil skull of *Sus scropha*.]

Proc. Acad. Nat. Sci. Phila., 1873, p. 207.

—— 1873 M

Some extinct turtles from the Eocene strata of Wyoming.

Proc. Acad. Nat. Sci. Phila., 1873, pp. 277–279.

Descriptions of *Trionyx heteroglyptus* and *Plastomenus thomasii*.

—— 1873 N

On two new species of *Saurodontidæ*.

Proc. Acad. Nat. Sci. Phila., 1873, pp. 337–339.

Describes *Portheus lestrio* and *P. gladius* and the new genus *Daptinus*.

—— 1873 O

On some new *Batrachia* and fishes from the Coal-measures of Linton, Ohio.

Proc. Acad. Nat. Sci. Phila., 1873, pp. 340–343.

—— 1873 P

On the types of molar teeth.

Proc. Acad. Nat. Sci. Phila., 1873, p. 371.

—— 1873 Q

[Remarks on fishes from the Coal-measures of Linton, Ohio.]

Proc. Acad. Nat. Sci. Phila., 1873, pp. 417–419.

—— 1873 R

[On *Menotherium lemurinum*, *Hypisodus minimus*, *Hypertragulus calcaratus*, *H. tricostatus*, *Protohippus*, and *Procamelus occidentalis*.]

Proc. Acad. Nat. Sci., Phila., 1873, pp. 419–420.

—— 1873 S

Second notice of extinct *Vertebrata* from the Tertiary of the Plains.

Palæont. Bull. No. 15, pp. 1–6.

"Issued Aug. 20, 1873." (Cope.)

Cope, E. D.—Continued. 1873 T

Third notice of extinct *Vertebrata* from the Tertiary of the Plains.

Palæont. Bull. No. 16, pp. 1–8.

"Published Aug. 20, 1873." (Cope.)

—— 1873 U

On some Eocene mammals obtained by Hayden's Geological Survey of 1872.

Palæont. Bull. No. 12, pp. 1–6.

Issued privately March 8, 1873. Not reprinted.

—— 1873 V

Palæontological Bulletin. Preliminary.

Pp. 1–2. Gives titles and dates of publication of Palæontological Bulletins Nos. 1–13.

—— 1873 W

The gigantic mammals of the genus *Eobasileus*.

Amer. Naturalist, vii, pp. 157–160.

—— 1873 X

On some of Professor Marsh's criticisms.

Amer. Naturalist, vii, pp. 290–299.

Forms, with slight changes, Palæont. Bull. No. 13.

—— 1873 Y

Proboscidians of the American Eocene. Correction.

Amer. Naturalist, vii, p. 49.

Makes a correction regarding the teeth of *Eobasileus cornutus*.

—— 1873 Z

The *Eobasileus* again.

Amer. Naturalist, vii, p. 181.

—— 1873 AA

On Professor Marsh's criticisms.

Amer. Naturalist, vii. Appendix to July number, p. 1.

This communication contains only eight lines.

—— 1873 BB

On the tusk of *Loxolophodon cornutus*.

Amer. Naturalist, vii, p. 315.

—— 1873 CC

Synopsis of new *Vertebrata* from the Tertiary of Colorado, obtained during the summer of 1873.

Pp. 1–19. Washington, Government Printing Office, Oct., 1873.

On the title page tnis paper is said to be extracted from the 7th Annual Report of the U. S. Geol. Surv. Terr., but it does not appear in that volume.

Cope, E. D.—Continued. 1873 DD

Some remarkable and gigantic animals.

The Independent, New York, Oct. 30, 1873.

Contains reports of the meeting of the Amer. Assoc. Adv. Sci. at Portland, Me. *Miobasileus*, *Symborodon*, and *Eobasileus* are referred to. *Symborodon acer*, *S. bucco*, *S. altirostris*, *S. heloceros* are more or less fully described.

—— 1874 A

On some extinct types of horned perissodactyles.

Proc. Amer. Assoc. Adv. Science, 22d meeting, Portland, 1873, pp. 108–109.

Reprinted in Ann. and Mag. Nat. Hist. (4), xiii, pp. 405–406.

Describes *Symborodon torvus*, *Miobasileus ophryas*, *Symborodon acer*, and *S. heloceras*.

—— 1874 B

Report on the vertebrate palæontology of Colorado.

Annual Report Geol. and Geog. Surv. Territories for 1873, F. V. Hayden, U. S. Geologist, Washington, D. C., 1874, pp. 427–533, pls. i–viii.

Chapter I. Introduction, pp. 429–430. II. the Cretaceous period, pp. 431–456. III. The Eocene period, pp. 456–461. IV. The Miocene period, pp. 461–518. V. The Loup Fork epoch, pp, 518–532.

An abstract of this paper appeared in Jour. de Zoologie, iv, 1875, pp. 354–359, with a list of the species described.

—— 1874 C

Review of the *Vertebrata* of the Cretaceous period found west of the Mississippi River. Sec. I. On the mutual relations of the Cretaceous and Tertiary formations of the West. Sec. II. List of species of *Vertebrata* from the Cretaceous formations of the West.

Bull. U. S. Geol. and Geog. Surv. of the Terrs,, i, No. 2, 1874, pp. 3–48.

—— 1874 D

Supplementary notices of fishes from the fresh-water Tertiaries of the Rocky Mountains.

Bull. U. S. Geol. and Geog. Surv. of the Terrs., i, No. 2, 1874, pp. 49–51.

—— 1874 E

Abstract of remarks at the meeting of the Amer. Philos. Soc., Jan. 16, 1874.

Proc. Amer. Philos. Soc., xiv, p. 110.

On *Poëbrotherium*, etc.

—— 1874 F

[Observations on age of lignite and and other formations of the West.]

Proc. Acad. Nat. Sci. Phila., 1874, pp. 12–13.

Cope, E. D.—Continued. 1874 G

Remarks on *Symborodon*, *Titanotherium*, and *Eobasileus*.

Proc. Acad. Nat. Sci. Phila., 1874, pp. 89–90.

—— 1874 H

Synopsis of result of work in connection with Hayden's U. S. Geological Survey during 1873.

Proc. Acad. Nat. Sci. Phila., 1874, pp. 116–117.

—— 1874 I

Notes on the Santa Fé marls and some of the contained vertebrate fossils.

Proc. Acad. Nat. Sci. Phila., 1874, pp. 147–152.

Also in Palæont. Bull. No. 18.

—— 1874 J

On a new mastodon and rodent.

Proc. Acad. Nat. Sci. Phila., 1874, pp. 221–223.

—— 1874 K

On the characters of *Symborodon*.

Proc. Acad. Nat. Sci. Phila., 1874, pp. 224–225.

—— 1874 L

Supplement to the extinct *Batrachia* and *Reptilia* of North America. I. Catalogue of the air-breathing *Vertebrata* from the Coal-measures of Linton, Ohio.

Trans. Amer. Philos. Soc., xv, pp. 261–278.

Also issued separately with pp. 1–18.

—— 1874 M

On the homologies and origin of the types of molar teeth of *Mammalia educabilia*.

Jour. Acad. Nat. Sci. Phila. (2), viii, pp. 71–89, with 29 figs. in the text.

—— 1874 N

The succession of life in North America.

Ann. and Mag. Nat. Hist. (4), xiii, pp. 326–331.

Reprinted from The Penn Monthly, v, 1874, pp. 138–145.

—— 1874 O

Report upon vertebrate fossils discovered in New Mexico, with descriptions of new species.

Extract from Appendix FF of the Annual Report of the Chief of Engineers, 1874. Washington, Gov. Print. Office, Nov. 28, 1874, pp. 1–18.

In order to make the pagination of the *separata* correspond to that of the Engineer's Report add 588.

This paper also forms "Appendix FF_3" (pp 115–130) of "Appendix FF" of the Annual Report of the Chief of Engineers for 1874.

Cope, E. D.—Continued. 1874 P

Report on the stratigraphy and Pliocene vertebrate palæontology of northern Colorado.

Bull. U. S. Geol. and Geog. Survey Terr., i, Bull. No. 1, ser. 1, pp. 9-28.

Includes also "Supplement. Additions to the synopsis of new *Vertebrata* from the Territory of Colorado, 1873," pp. 22-28.

—— 1874 Q

[Remarks on Professor Marsh's *Brontotherium ingens*.]

Proc. Amer. Philos. Soc., xiv, p. 2.

B. ingens is regarded as a synonym of *Symborodon trigonoceras*.

—— 1874 R

On Dr. Leidy's "Correction."

Proc. Acad. Nat. Sci. Phila., pp. 224-225.

—— 1874 S

[Description of a species of *Ctenodus*.]

Proc. Acad. Nat. Sci. Phila., 1874, pp. 91-92.

This species of *Ctenodus* is without name, but it was afterwards called *C. ohioensis*.

—— 1874 T

[Remarks on skulls of *Eobasileus galeatus* and of a fossil walrus.]

Proc. Amer. Philos. Soc., xiv, pp. 17-18.

The skull of *Eobasileus* was from Wyoming; that of the fossil walrus from Accomac Harbor, Va.

—— 1875 A

Note on the genus *Calamodon*.

Amer. Jour. Sci. (3), ix, p. 228.

—— 1875 B

The geology of New Mexico.

Amer. Jour. Sci. (3), x, pp. 152-153.

—— 1875 C

Systematic catalogue of *Vertebrata* of the Eocene of New Mexico, collected in 1874.

Report to the Engineer Department, U. S. Army, in charge of Lieut. Geo. M. Wheeler. Washington, April 17, 1875, pp. 5-37.

—— 1875 D

Synopsis of the extinct *Batrachia* from the Coal-measures.

Report of the Geol. Survey of Ohio, Palæontology, ii, 1875, pp. 350-411; pls. xxvi-xlv.

—— 1875 E

The *Vertebrata* of the Cretaceous formations of the West.

Report U. S. Geol. Surv. of the Territories, ii, pp. 1-303; pls. i-lv, and 10 wood cuts. Washington, D. C., 1875.

Cope, E. D.—Continued. 1875 F

Report on the geology of that part of northwestern New Mexico examined during the field season of 1874, by E. D. Cope, palæontologist and geologist.

Appendix LL of Annual Report of the Chief of Engineers in annual report upon the geographical explorations and surveys west of the 100th meridian, etc., by Geo. M. Wheeler, 1st Lieut., Engineers. Washington, D. C., 1875. Pp. 61-116; pls. (illustrating paleontology) ii, v, vi.

The pagination here given is that of the *separata*. To make this correspond with that of the complete report 920 must be added.

Same as Cope, 1875 U, with different pagination.

—— 1875 G

On the fishes of the Tertiary shales of the South Park.

Bull. U. S. Geol. and Geog. Surv. Territories, 2d series, No. 1, 1875, pp. 3-5.

—— 1875 H

Synopsis of the *Vertebrata* of the Miocene of Cumberland County, New Jersey.

Proc. Amer. Philos. Soc., xiv, pp. 361-364.

—— 1875 I

On the transition beds of the Saskatchawan district.

Proc. Acad. Nat. Sci. Phila., 1875, pp. 9-10.

—— 1875 J

The extinct *Batrachia* of Ohio.

Proc. Acad. Nat. Sci. Phila., 1875, p. 16.

—— 1875 K

On Green-sand *Vertebrata*.

Proc. Acad. Nat. Sci. Phila., 1875, p. 19.

—— 1875 L

On the homologies of the sectorial tooth of *Carnivora*.

Proc. Acad. Nat. Sci. Phila., 1875, pp. 20-23.

—— 1875 M

The feet of *Bathmodon*.

Proc. Acad. Nat. Sci. Phila., 1875, p. 73.

—— 1875 N

On fossil lemurs and dogs.

Proc. Acad. Nat. Sci. Phila., 1875, pp. 255-256.

—— 1875 O

On the antelope deer of the Santa Fé marls.

Proc. Acad. Nat. Sci. Phila., 1875, p. 257.

—— 1875 P

On some new fossil *Ungulata*.

Proc. Acad. Nat. Sci. Phila., 1875, pp. 258-261.

From Palæontological Bulletin No. 19.

Cope, E. D.—Continued. 1875 Q

The phylogeny of the camels.

Proc. Acad. Nat. Sci. Phila., 1875, pp. 261–262.

—— 1875 R

The geology of New Mexico.

Proc. Acad. Nat. Sci. Phila. 1875, pp. 263–267.

—— 1875 S

On an extinct vulturine bird.

Proc. Acad. Nat. Sci. Phila., 1875, p. 271.

Refers *Cathartes umbrosus* to *Vultur*.

—— 1875 T

On fossil remains of reptilia and fishes from Illinois.

Proc. Acad. Nat. Sci. Phila., 1875, pp. 404–411.

Reprinted in Ann. and Mag. Nat. Hist. (4), xvii, 178–184.

According to Prof. Cope (Cope, 1888 BB, p. 286) this paper was not issued until 1876.

—— 1875 U

Report on the geology of that part of northwestern New Mexico examined during the field season of 1874, by E. D. Cope, palæontologist and geologist.

From annual report upon the geographical explorations and surveys west of the 100th meridian, in California, etc., by Geo. M. Wheeler; being Appendix LL of the Annual Report of the Chief of Engineers, pp. 981-1017; pls. ii, v, and vi. Pp. 61-97 of separate report LL. Same as Cope, 1875 F, with different pagination.

—— 1875 V

Synopsis of the *Vertebrata* whose remains have been preserved in the formations of North Carolina.

Report Geol. Surv. of North Carolina, i, by W. C. Kerr, Appendix B, pp. 29–52, with pls. v–viii.

—— 1875 W

Report on the vertebrate fossils from the Fort Union group of Milk River.

British North Amer. Boundary Commission's Report on the geology and resources of the region in the vicinity of the forty-ninth parallel, from the Lake of the Woods to the Rocky Mountains, with lists of plants and animals collected and notes on the fossils; by George Mercer Dawson, geologist and botanist to the commission. Montreal, 1875. Pp. 333–337.

—— 1875 X

Check-list of North American *Batrachia* and *Reptilia*, with a systematic list of the higher groups and an essay on geographical distribution; based on the specimens in the U. S. National Museum.

Bull. No. 1, U. S. Nat. Mus., pp. 1–95.

Cope, E. D.—Continued. 1876 A

On the supposed *Carnivora* of the Eocene of the Rocky Mountains.

Palæont. Bull. No. 20, pp. 1–4.

It is stated in this bulletin that it was published Dec. 22, 1875.

—— 1876 B

On a gigantic bird from the Eocene of New Mexico.

Proc. Acad. Nat. Sci. Phila., 1876, pp. 10–11.

Reprinted in Amer. Jour. Sci. (3), xii, pp. 306–307, and in Jour. de Zoologie., v, 1876, pp. 264–267.

Describes *Diatryma gigantea*.

—— 1876 C

On the *Tæniodonta*, a new group of Eocene *Mammalia*.

Proc. Acad. Nat. Sci. Phila., 1876, p. 39.

—— 1876 D

On the geologic age of the vertebrate fauna of the Eocene of New Mexico.

Proc. Acad. Nat. Sci. Phila., 1876, pp. 63–66.

Forms Palæontological Bulletin No. 21.

A translation of this paper appeared in Jour. de Zoologie, v, 1876, pp. 307–311.

—— 1876 E

On some supposed lemurine forms of the Eocene period.

Proc. Acad. Nat. Sci. Phila., 1876, pp. 88–89.

—— 1876 F

On a new genus of fossil fishes.

Proc. Acad. Nat. Sci. Phila., 1876, p. 113.

—— 1876 G

On a new genus of *Camelidæ*.

Proc. Acad. Nat. Sci. Phila., 1876, pp. 144–147.

Describes *Protolabis*.

—— 1876 H

Descriptions of some vertebrate remains from the Fort Union beds of Montana.

Proc. Acad. Nat. Sci. Phila., 1876, pp. 248–261.

Issued also as Pal. Bull. No. 22, pp. 1–14.

—— 1876 I

On some extinct reptiles and *Batrachia* from the Judith River and Fox Hills beds of Montana.

Proc. Acad. Nat. Sci. Phila., 1876, pp. 340–359.

Issued also as Pal. Bull. No. 23, pp. 1–20.

—— 1877 A

A continuation of researches among the *Batrachia* of the Coal-measures of Ohio.

Proc. Amer. Philos. Soc., xvi, pp. 573–578.

Issued as part of Pal. Bull. No. 24.

Cope, E. D.—Continued. 1877 B

On a dinosaurian from the Trias of Utah.

Proc. Amer. Philos. Soc., xvi, pp. 579–584. Issued as part of Pal. Bull. No. 24.

Describes *Dystrophæus viæmalæ*.

—— 1877 C

On a new proboscidian.

Proc. Amer. Philos. Soc., xvi, pp. 584–585. Also as part of Pal. Bull. No. 24.

Describes *Cænobasileus tremontigerus*. This genus and species were withdrawn in Cope, E. D., 1889 J., p. 207.

—— 1877 D

On some new or little known reptiles and fishes of the Cretaceous No. 3 of Kansas.

Proc. Amer. Philos. Soc., xvii, pp. 176–181. Issued also as part of Pal. Bull. No. 26.

—— 1877 E

Descriptions of extinct *Vertebrata* from the Permian and Triassic formations of the United States.

Proc. Amer. Philos. Soc., xvii, pp. 182–193. Not published until March 1, 1878. Issued as part of Pal. Bull. No. 26. This was "printed Nov. 20, 1877."

—— 1877 F

On reptilian remains from the Dakota beds of Colorado.

Proc. Amer. Philos. Soc., xvii, pp. 193–196.

—— 1877 G

Report on the geology of the region of the Judith River, Montana, and on vertebrate fossils obtained on or near the Missouri River.

Bull. U. S. Geol. and Geog. Surv., iii, article xix, pp. 565–597; pls. 30–34.

—— 1877 H

On a carnivorous dinosaurian from the Dakota beds of Colorado.

Bull. U. S. Geol. and Geog. Surv., iii, article xxxiii, pp. 805–806.

Describes *Lælaps trihedrodon*.

—— 1877 I

A contribution to the knowledge of the ichthyological fauna of the Green River shales.

Bull. U. S. Geol. and Geog. Surv., iii, article xxxiv, pp. 807–819.

—— 1877 J

On the genus *Erisichthe*.

Bull. U. S. Geol. and Geog. Surv., iii, article xxxv, pp. 821–823.

Cope, E. D.—Continued. 1877 K

Report upon the extinct *Vertebrata* obtained in New Mexico by parties of the expedition of 1874. Chapter xi. Fossils of the Mesozoic periods and Geology of Mesozoic and Tertiary beds. xii. Fossils of the Eocene period. xiii. Fossils of the Loup Fork Epoch.

Geographical surveys west of the one hundredth meridian, First Lieut. Geo. M. Wheeler, Corps of Engineers, U. S. Army, in charge. Vol. iv, Palæontology, Washington, 1877. Pp. 1–370, pls. xxii–lxxxiii.

—— 1877 L

On the brain of *Coryphodon*.

Proc. Amer. Philos. Soc., xvi, pp. 616–620; pls. i–ii.

—— 1877 M

On the brain of *Procamelus occidentalis*.

Proc. Amer. Philos. Soc., xvii, pp. 49–52; pl. i.

—— 1877 N

On the *Vertebrata* of the bone bed in eastern Illinois.

Proc. Amer. Philos. Soc., xvii, pp. 52–63.

—— 1877 O

Synopsis of the cold-blooded *Vertebrata* procured by Prof. James Orton during his exploration of Peru in 1876-77.

Proc. Amer. Philos. Soc., xvii, pp. 33–49.

Contains on p. 41 definitions of the subclasses of fishes, including the new class *Hyopomata*.

—— 1877 P

On a new species of *Adocidæ* from the Tertiary of Georgia.

Proc. Amer. Philos. Soc., xvii, pp. 82–84. Issued as part of Palæontological Bulletin No. 25.

Describes *Amiphiemys oxysternum*.

—— 1877 Q

On a gigantic saurian from the Dakota epoch of Colorado.

Pal. Bull. No. 25, pp. 5–10.

Describes *Camarasaurus supremus*.

—— 1877 R

On *Amphicœlias*, a genus of saurians from the Dakota epoch of Colorado.

Pal. Bull. No. 27, pp. 2–8, with date Dec. 10, 1877.

—— 1877 S

The lowest mammalian brain.

Amer. Naturalist, xi, pp. 312–313.

Describes brain of *Coryphodon*.

Cope, E. D.—Continued. 1877 T

The discovery of *Lælaps* in Montana.

Amer. Naturalist, xi, p. 311.

—— 1877 U

The sea serpents of the Cretaceous period.

Amer. Naturalist, xi, p. 311.

Brief reference to the discovery of *Elasmosaurus orientalis*.

—— 1877 V

The dentition of the herbivorous *Dinosauria*.

Amer. Naturalist, xi, pp. 311, 312.

—— 1877 W

The largest known saurian.

Amer. Naturalist, xi, p. 629.

Brief description of "*Camæosaurus*" *supremus*.

—— 1877 X

Remains of a huge saurian in Pennsylvania.

Amer. Naturalist, xi, p. 629.

Refers to *Palæoctonus appalachianus*, described in Proc. Amer. Phil. Soc., 1877, xvii, p. 182 (Cope, 1877 E).

—— 1877 Y

New vertebrate fossils.

Amer. Naturalist, xi, p. 629.

—— 1877 Z

New fossil fishes from Wyoming.

Amer. Naturalist, xi, p. 570.

A list, without descriptions, of fossil fishes found in Wyoming.

—— 1878 A

On the classification of the extinct fishes of the lower types.

Proc. Amer. Assoc. Adv. Sci., 26th meeting, Nashville, 1877, pp. 292–300.

—— 1878 B

Descriptions of extinct *Batrachia* and *Reptilia* from the Permian formation of Texas.

Proc. Amer. Philos. Soc., xvii, pp. 505–530. Also part of Pal. Bull. No. 29.

—— 1878 C

Descriptions of new *Vertebrata* from the upper Tertiary formations of the the West.

Proc. Amer. Philos. Soc., xvii, pp. 219–231. Issued also as part of Pal. Bull. No. 28.

—— 1878 D

On some saurians found in the Triassic of Pennsylvania, by C. M. Wheatley.

Proc. Amer. Philos. Soc., xvii, pp. 231–232. Issued also as part of Pal. Bull. No. 28.

Cope, E. D.—Continued. 1878 E

The saurians of the Dakota epoch.

Amer. Naturalist, xii, pp. 56–57.

Refers to discovery of *Camarasaurus* and *Amphicœlias*.

—— 1878 F

Descriptions of fishes from the Cretaceous and Tertiary deposits west of the Mississippi River.

Bull. U. S. Geol. and Geog. Surv. of the Territories, 1878, vol. iv, pp. 67–77.

—— 1878 G

Professor Owen on the *Pythonomorpha*.

Bull. U. S. Geol. and Geog. Surv. Territories, 1878, iv, pp. 299–311.

—— 1878 H

Descriptions of new extinct *Vertebrata* from the upper Tertiary and Dakota formations.

Bull. U. S. Geol. and Geog. Surv. Territories, 1878, iv, pp. 379–396.

—— 1878 I

On the *Vertebrata* of the Dakota epoch of Colorado.

Proc. Amer. Philos. Soc., xvii, pp. 233–247. Issued as Pal. Bull. No. 28.

—— 1878 J

Clepsydrops in Texas.

Amer. Naturalist, xii, p. 57.

A brief note.

—— 1878 K

The affinities of the *Dinosauria*.

Amer. Naturalist, xii, pp. 57–58.

A brief note on the views of Professor Owen on the *Dinosauria*.

—— 1878 L

New artiodactyles of the upper Tertiary.

Amer. Naturalist, xii, p. 58.

—— 1878 M

On the saurians recently discovered in the Dakota beds of Colorado.

Amer. Naturalist, xii, pp. 71–85, with 17 woodcuts in the text.

—— 1878 N

A new *Mastodon*.

Amer. Naturalist, xii, p. 128.

Brief notice of *M. campester*.

—— 1878 O

The snout fishes of the Kansas chalk.

Amer. Naturalist, xii, pp. 128–129.

—— 1878 P

A new genus of *Oreodontidæ*.

Amer. Naturalist, xii, p. 129.

Brief notice of *Ticholeptus*.

Cope, E. D.—Continued. 1878 Q

[Note on fossils obtained by Mr. Russell S. Hill, including bones of *Protostega gigas*.]

Amer. Naturalist, xii, p. 137.

—— 1878 R

A new genus of *Dinosauria* from Colorado.

Amer. Naturalist, xii, pp. 188–189.

Brief notice of discovery of *Hypsirophus*.

—— 1878 S

[Review of Prof. L. Lesquereux's Contributions to the fossil flora of the Western Territories. Part II. The Tertiary flora.]

Amer. Naturalist, xii, pp. 243–246.

—— 1878 T

The structure of *Coryphodon*.

Amer. Naturalist, xii, pp. 324–326.

Reply to Prof. O. C. Marsh, in Nature, vol. xvii, p. 340.

—— 1878 U

A new fauna.

Amer. Naturalist, xii, pp. 327–328.

Notes discovery of *Diadectes*, *Parioxys*, *Trimerorhachis*, etc.

—— 1878 V

A new opisthocœlous dinosaur.

Amer. Naturalist, xii, p. 406.

Reprinted in Ann. and Mag. Nat. Hist. 5, vol. ii, p. 194.

Notice of discovery of *Epanterias*.

—— 1878 W

Professor Marsh on Permian reptiles.

Amer. Naturalist, xii, pp. 406–408.

Refers to paper by Professor Marsh in Amer. Jour. Science, May, 1878.

—— 1878 X

The species of *Rhinoceros* of the Loup Fork epoch.

Amer. Naturalist, xii, pp. 488–489.

—— 1878 Y

A new species of *Amphicœlias*.

Amer. Naturalist, xii, pp. 563–564, with 1 woodcut.

Describes *A. fragillimus*.

—— 1878 Z

A new *Diadectes*.

Amer. Naturalist, xii, p. 565.

Describes *D. molaris*.

—— 1878 AA

The vertebræ of *Rachitomus*.

Amer. Naturalist, xii, p. 633.

Cope, E. D.—Continued. 1878 BB

A fossil walrus discovered at Portland, Me.

Amer. Naturalist, xii, p. 633.

—— 1878 CC

The Theromorphous *Reptilia*.

Amer. Naturalist, xii, pp. 829–830.

—— 1878 DD

The homology of the chevron bones.

Amer. Naturalist, xii, p. 319.

—— 1878 EE

Palæontology of Georgia.

Amer. Naturalist, xii, p. 128.

Announces the discovery of fossil reptiles in Cretaceous and Tertiary deposits in Georgia.

—— 1878 FF

Triassic saurians from Pennsylvania.

Amer. Naturalist, xii, p. 58.

—— 1878 GG

A new deer from Indiana.

Amer. Naturalist, iv, p. 189.

Describes *Cariacus dolichopsis*.

—— 1878 HH

Mount Lebanon fishes in Dakota.

Amer. Naturalist, xii, p. 57.

—— 1879 A

The relations of the horizons of extinct *Vertebrata* of Europe and America.

Bull. U. S. Geol. and Geog. Surv. Terr., 1880, v, pp. 33–54.

—— 1879 B

Observations on the faunæ of the Miocene Tertiaries of Oregon.

Bull. U. S. Geol. and Geog. Surv. Terr., 1880, v, pp. 55–69.

—— 1879 C

On the extinct species of *Rhinoceridæ* of North America and their allies.

Bull. U. S. Geol. and Geog. Surv. Terr., 1879–80, v, pp. 227–237.

An adaptation of this paper was published in Amer. Naturalist, xiii, 1879, pp. 771a–771j, with 8 woodcuts.

—— 1879 D

On some characters of the Miocene fauna of Oregon.

Proc. Amer. Philos. Soc., xviii, pp. 63–78.

Also in Pal. Bull. No. 30, pp. 1–16; said to have been issued Dec. 3, 1878.

—— 1879 E

Second contribution to a knowledge of the Miocene fauna of Oregon.

Proc. Amer. Philos. Soc., xviii, pp. 370–376.

Not issued until January, 1880. The same was issued as Pal. Bull. No. 31, pp. 1–7, Dec., 1879.

A notice of this paper with list of species described occurs in Amer. Naturalist, xiv, p. 60.

Cope, E. D.—Continued. 1879 F

On the genera of *Felidæ* and *Canidæ*.

Proc. Acad. Nat. Sci. Phila., 1879, pp. 168-194.

Reprinted in Ann. and Mag. Nat. Hist. (5), vol. v, pp. 36-45, 92-107.

Contains list of genera and species of *Felidæ*, the genera of *Canidæ*, and descriptions of new species.

—— 1879 G

The origin of the specialized teeth of the *Carnivora*.

Amer. Naturalist, xiii, pp. 171-173.

—— 1879 H

Extinct *Mammalia* of Oregon.

Amer. Naturalist, xiii, p. 181.

—— 1879 I

The necks of the *Sauropterygia*.

Amer. Naturalist, xiii, p. 132.

—— 1879 J

The scales of *Liodon*.

Amer. Naturalist, xiii, p. 132.

A brief note calling attention to observation of Professor Snow and to his paper in Review of Science and Industry.

—— 1879 K

Merycopater and *Hoplophoneus*.

Amer. Naturalist, xiii, p. 197.

—— 1879 L

A new genus of *Perissodactyla*.

Amer. Naturalist, xiii, p. 270.

Establishes the genus *Anchisodon*.

—— 1879 M

A new genus of *Ichthyopterygia*.

Amer. Naturalist, xiii, p. 271.

Notice of O. C. Marsh's genus, *Sauranodon*.

—— 1879 N

The Amyzon Tertiary beds.

Amer. Naturalist, xiii, p. 332.

—— 1879 O

A sting ray from the Green River shales of Wyoming.

Amer. Naturalist, xiii, p. 333.

The genus *Xiphotrygon* established.

—— 1879 P

American *Aceratheria*.

Amer. Naturalist, xiii, p. 333.

—— 1879 Q

The lower jaw of *Loxolophodon*.

Amer. Naturalist, xiii, p. 334.

—— 1879 R

New Jurassic *Dinosauria*.

Amer. Naturalist, xiii, pp. 402-404, with 3 wood cuts.

Descriptions of *Camarasaurus leptodirus* and *Hypsirophus seeleyanus*.

Cope, E. D.—Continued. 1879 S

A new *Anchitherium*.

Amer. Naturalist, xiii, pp. 462-463.

Description of *A. præstans*.

—— 1879 T

A decade of dogs.

Amer. Naturalist, xiii, p. 530.

A brief note giving a list of ten species of dogs furnished by the Truckee beds in Oregon.

—— 1879 U

The cave bear of California.

Amer. Naturalist, xiii, p. 791.

Reprinted in Ann. and Mag. Nat. Hist. (5), vol. v, pp. 260-261; Amer. Jour. Sci., 1880, xix, p. 155.

Describes *Arctotherium simum*.

—— 1879 V

On the extinct American rhinoceroses and their allies.

Amer. Naturalist, xiii, pp. 771a-771j, with 8 figs. in the text.

—— 1879 W

Palæontological report of the Princeton scientific expedition of 1877.

Amer. Naturalist, xiii, p. 33.

A brief notice of the results of the expedition referred to in the title.

—— 1879 X

Scientific news.

Amer. Naturalist, xiii, pp. 798a-798b.

Contains brief notice of excursions to Colorado and descriptions of *Archælurus debilis* and *Hoplophoneus platycopis*.

—— 1880 A

Second contribution to the history of the *Vertebrata* of the Permian formation of Texas.

Proc. Amer. Philos. Soc., xix, pp. 38-58.

Issued also as Pal. Bull. No. 32, pp. 1-22.

—— 1880 B

On the foramina perforating the posterior part of the squamosal bone of the *Mammalia*.

Proc. Amer. Philos. Soc., xviii, pp. 452-461.

—— 1880 C

On the genera of the *Creodonta*.

Proc. Amer. Philos. Soc., xix, pp. 76-82.

Synopsis in Kosmos, x, pp. 299-300.

—— 1880 D

On the extinct cats of America.

Amer. Naturalist, xiv, pp. 833-858, with 15 wood cuts in the text.

—— 1880 E

Hill's Kansas explorations.

Amer. Naturalist, xiv, p. 141.

Note on fossils collected by Russell S. Hill.

Cope, E. D.—Continued. 1880 F

Notes on sabre-tooths.

Amer. Naturalist, xiv, p. 143.

New genus *Pogonodon* established.

—— 1880 G

A new *Hippidium*.

Amer. Naturalist, xiv, p. 223.

H. spectans, from Oregon, described.

—— 1880 H

The skull of *Empedocles*.

Amer. Naturalist, xiv, p. 304.

—— 1880 I

A new genus of Tapiroids.

Amer. Naturalist, xiv, pp. 382–383.

The genus *Triplopus* characterized.

—— 1880 J

The structure of the Permian *Ganocephala*.

Amer. Naturalist, xiv, pp. 383–384.

—— 1880 K

A new genus of *Rhinocerontidæ*.

Amer. Naturalist, xiv, p. 540.

The genus *Peraceras* established.

—— 1880 L

Extinct *Batrachia*.

Amer. Naturalist, xiv, pp. 609–610.

—— 1880 M

The genealogy of the American rhinoceroses.

Amer. Naturalist, xiv, pp. 610–611.

The new genus *Cænopus* proposed.

—— 1880 N

The bad lands of the Wind River and their fauna.

Amer. Naturalist, xiv, pp. 745–748.

Two new genera and nine new species proposed.

—— 1880 O

The northern Wasatch fauna.

Amer. Naturalist, xiv, p. 908.

—— 1880 P

Traquair on *Platysomidæ*.

Amer. Naturalist, xiv, pp. 439–440.

Review of Traquair, 1879 A.

—— 1880 Q

The Geological Record.

Amer. Naturalist, xiv, p. 512.

A notice of the Geological Record for 1877, with citations of some errors.

—— 1880 R

Marsh on Jurassic *Dinosauria*.

Amer. Naturalist, xiv, p. 302.

—— 1880 S

Remarks on fossil vertebrates from California. *Elotherium*, *Mastodon obscurus*.

Amer. Naturalist, xiv, p. 62.

Cope, E. D.—Continued. 1880 T

The Manti beds of Utah.

Amer. Naturalist, xiv, p. 303.

—— 1881 A

On some new *Batrachia* and *Reptilia* from the Permian beds of Texas.

Bull. U. S. Geol. and Geog. Surv. Terr., vi, article ii, pp. 79–82.

—— 1881 B

On a wading bird from the Amyzon shales.

Bull. U. S. Geol. and Geog. Surv. Terr., vi, article iii, pp. 83–85.

Describes *Charadrius sheppardianus*.

—— 1881 C

On the *Nimravidæ* and *Canidæ* of the Miocene period.

Bull. U. S. Geol. and Geog. Surv. Terr., vi, article iii, pp. 165–181.

—— 1881 D

On the *Vertebrata* of the Wind River Eocene beds of Wyoming.

Bull. U. S. Geol. and Geog. Surv. Terr., vi, article viii, pp. 183–202.

Brief notice in Amer. Naturalist, vol. xv, p. 74 (Cope, 1881 CC).

—— 1881 E

Review of the *Rodentia* of the Miocene period of North America.

Bull. U. S. Geol. and Geog. Surv. Terr., vi, article xv, pp. 361–386.

—— 1881 F

On the *Canidæ* of the Loup Fork epoch.

Bull. U. S. Geol. and Geog. Surv. Terr., vi, article xvi, pp. 387–390.

—— 1881 G

The systematic arrangement of the order *Perissodactyla*.

Proc. Amer. Philos. Soc., xix, pp. 377–401.

—— 1881 H

On some *Mammalia* of the lowest Eocene beds of New Mexico.

Proc. Amer. Philos. Soc., xix, pp. 484–495.

Issued also as Pal. Bull. No. 33.

—— 1881 I

On the origin of the foot structures of the Ungulates.

Amer. Naturalist, xv, pp. 269–273, with 5 figs. in the text.

—— 1881 J

On the effect of impacts and strains on the feet of *Mammalia*.

Amer. Naturalist, xv, pp. 542–548, with 11 figs. in the text.

Cope, E. D.—Continued. 1881 K

Catalogue of *Vertebrata* of the Permian formation of the United States.

Amer. Naturalist, xv, pp. 162–164.

—— 1881 L

Extinct palæozoic fishes from Canada.

Amer. Naturalist, xv, pp. 252–253.

Notice of a paper read by J. F. Whiteaves.

—— 1881 M

A new fossil bird.

Amer. Naturalist, xv, p. 253.

Notice of Dr. J. A. Allen's description of *Palæospiza bella*.

—— 1881 N

Mammalia of the Lower Eocene beds.

Amer. Naturalist, xv, pp. 337–338.

Description of *Peryptichus carinidens* and *Deltatherium fundaminis*, new genera and new species.

—— 1881 O

The classification of the *Perissodactyla*.

Amer. Naturalist, xv, p. 340.

—— 1881 P

Miocene dogs.

Amer. Naturalist, xv, p. 497.

Contains correction of dental formula of *Hyænocyon* and proposal of new genus *Oligobunis*.

—— 1881 Q

The *Rodentia* of the American Miocene.

Amer. Naturalist, xv, pp. 586–587.

A catalogue of the known species, together with place of original description and the horizon of occurrence.

—— 1881 R

A new *Clidastes* from New Jersey.

Amer. Naturalist, xv, pp. 587–588.

Description of *C. conodon*.

—— 1881 S

The temporary dentition of a new Creodont.

Amer. Naturalist, xv, pp. 667–669.

Description of *Triïsodon quivirensis* and *Deltatherium absarokæ*.

—— 1881 T

A Laramie saurian in the Eocene.

Amer. Naturalist, xv, pp. 669–670.

A new species, *Champsosaurus australis*, found in probably the Puerco.

—— 1881 U

Mammalia of the lowest Eocene.

Amer. Naturalist, xv, pp. 829–831.

Descriptions of *Conoryctes comma*, gen. et spec. nov., *Catathlæus rhabdodon*, gen. et spec. nov., and *Mioclænus turgidus*, gen. et spec. nov.

Cope, E. D.—Continued. 1881 V

Eocene *Plagiaulacidæ*.

Amer. Naturalist, xv, pp. 921–922.

Description of *Ptilodus mediævus*, gen. et spec. nov.

—— 1881 W

Belodon in New Mexico.

Amer. Naturalist, xv, pp. 922–923.

Descriptions of *B. buceros* and *B. scolopax*.

—— 1881 X

A new type of *Perissodactyla*.

Amer. Naturalist, xv, pp. 1017–1018.

Refers *Phenacodus* to the *Perissodactyla*.

—— 1881 Y

New genus of *Perissodactyla diplarthra*.

Amer. Naturalist, xv, p. 1018.

Refers *Hyracotherium tapirinum* to a new genus, *Systemodon*.

—— 1881 Z

Notes on *Creodonta*.

Amer. Naturalist, xv, pp. 1018–1020.

Describes *Lipodectes penetrans* and *L. pelvidens*, new species, and establishes the genus *Dissacus*.

—— 1881 AA

The Permian formation of New Mexico.

Amer. Naturalist, xv, pp. 1020–1021.

New species described, *Eryops reticulatus* and *Zatrachys apicalis*.

—— 1881 BB

Geological news.

Amer. Naturalist, xv, pp. 254, 340, 413, 1023.

—— 1881 CC

The *Vertebrata* of the Eocene of the Wind River basin.

Amer. Naturalist, xv, pp. 74–75.

Consists of a notice of the paper Cope 1881 D, and contains description of *Bathyopsis fissidens* Cope.

—— 1882 A

The classification of the ungulate *Mammalia*.

Proc. Amer. Philos. Soc., xx, pp. 438–447, with 10 figs. in the text.

Issued also as part of Pal. Bul. No. 35.

—— 1882 B

Third contribution to the history of the *Vertebrata* of the Permian formation of Texas.

Proc. Amer. Philos. Soc., xx, pp. 447–461.

Issued also as part of Pal. Bull. No. 35.

—— 1882 C

Synopsis of the *Vertebrata* of the Puerco Eocene epoch.

Proc. Amer. Philos. Soc., xx, pp. 461–471.

Also as part of Pal. Bull. No. 35.

Cope, E. D.—Continued. 1882 D

On the systematic relations of the *Carnivora Fissipedia*.

Proc. Amer. Philos. Soc., xx, pp. 471-475.

Issued also as part of Pal. Bull. No. 35. Reprinted in Ann. and Mag. Nat. Hist. (5), xii, pp. 112-116.

—— 1882 E

Contributions to the history of the *Vertebrata* of the Lower Eocene of Wyoming and New Mexico, made during 1881. I. The fauna of the Wasatch beds of the basin of the Big Horn River. II. The fauna of the Catathlæus beds, or Lowest Eocene, New Mexico.

Proc. Amer. Philos. Soc., xx, pp. 139-197.

Issued also as Pal. Bull. No. 34.

For notices of this paper see Amer. Jour. Sci., vol. xxiii, p. 325.

—— 1882 F

On the *Condylarthra*.

Proc. Acad. Nat. Sci. Phila., 1882, pp. 95-97.

Reprinted in Ann. and Mag. Nat. Hist. (5), x, pp. 76-79.

—— 1882 G

Contemporaneity of man and Pliocene mammals.

Proc. Acad. Nat. Sci. Phila., 1882, pp. 291-292.

—— 1882 H

On *Uintatherium*, *Bathmodon*, and *Triisodon*.

Proc. Acad. Nat. Sci. Phila., 1882, pp. 294-300.

—— 1882 I

The Tertiary formations of the central region of the United States.

Amer. Naturalist, xvi, pp. 177-195, with 5 wood cuts in the text.

—— 1882 J

The reptiles of the American Eocene.

Amer. Naturalist, xvi, pp. 979-993, with 13 wood cuts in the text.

—— 1882 K

The oldest artiodactyle.

Amer. Naturalist, xvi, p. 71.

Reprinted in Ann. and Mag. Nat. Hist. (5), ix, p. 204.

Description of *Mioclænus brachystomus*.

—— 1882 L

The characters of the *Tæniodonta*.

Amer. Naturalist, xvi, p. 72.

Reprinted in Ann. and Mag. Nat. Hist. (5), ix, pp. 205-206.

—— 1882 M

New forms of *Coryphodontidæ*.

Amer. Naturalist, xvi, p. 73.

Cope, E. D.—Continued. 1882 N

An anthropomorphous lemur.

Amer. Naturalist, xvi, pp. 73-74.

Describes *Anaptomorphus homunculus*.

—— 1882 O

Recent extinction of the mastodon.

Amer. Naturalist, xvi, pp. 74-75.

Refers to Prof. John Collett's "Geological Report of Indiana for 1880."

—— 1882 P

A new genus of *Tillodonta*.

Amer. Naturalist, xvi, pp. 156-157.

Describes *Psittacotherium multifragum*.

—— 1882 Q

Marsh on the classification of the *Dinosauria*.

Amer. Naturalist, xvi, pp. 253-255.

—— 1882 R

New characters of the *Perissodactyla Condylarthra*.

Amer. Naturalist, xvi, p. 334.

—— 1882 S

Mesonyx and *Oxyæna*.

Amer. Naturalist, xvi, p. 334.

—— 1882 T

The rhachitomous *Stegocephala*.

Amer. Naturalist, xvi, pp. 334-335.

—— 1882 U

A second genus of Eocene *Plagiaulacidæ*.

Amer. Naturalist, xvi, pp. 416-417.

Description of *Catopsalis foliatus*.

—— 1882 V

Two new genera of the Puerco Eocene.

Amer. Naturalist, xvi, pp. 417-418.

Descriptions of *Haploconus lineatus* and *Pantolambda bathmodon*, new genera and new species.

—— 1882 W

The ancestry and habits of *Thylacoleo*.

Amer. Naturalist, xvi, pp. 520-522.

Correction of the table of genera of *Plagiaulacidæ*.

—— 1882 X

Notes on Eocene *Mammalia*.

Amer. Naturalist, xvi, p. 522.

Lipodectes penetrans is a synonym of *Deltatherium fundaminis*. *D. absarokæ* is referred to *Didelphodus*. *Oligotomus osbornianus* is referred to *Ectocion*.

—— 1882 Y

On the *Taxeopoda*, a new order of *Mammalia*.

Amer. Naturalist, xvi, pp. 522-523.

Cope, E. D.—Continued. 1882 Z

A new genus of *Tæniodonta.*

Amer. Naturalist, xvi, pp. 604–605.

Description of *Tæniolabis sulcatus.*

—— 1882 AA

New marsupials from the Puerco Eocene.

Amer. Naturalist, xvi, pp. 684–686.

Polymastodon taöensis, gen. et spec. nov.; *Ptilodus trovessartianus*, spec. nov.; *Haploconus entoconus*, spec. nov.; and *H. gillianus* spec. nov.

—— 1882 BB

Mammalia in the Laramie formation.

Amer. Naturalist, xvi, pp. 830–831.

Description of *Meniscoëssus conquistus*, gen. et spec. nov.

—— 1882 CC

A new form of *Tæniodonta.*

Amer. Naturalist, xvi, pp. 831–832.

Describes *Hemiganus vultuosus*, gen. et spec. nov.

—— 1882 DD

The *Periptychidæ.*

Amer. Naturalist, xvi, pp. 832–833.

Periptychidæ, fam. nov. established; *Hemithlæus kowalevskianus*, gen. et spec. nov., and *Anisonchus coniferus* described.

—— 1882 EE

Some new forms from the Puerco Eocene.

Amer. Naturalist, xvi, pp. 833–834.

Mioclænus opisthacus, *M. baldwini*, *Protogonia plicifera*, and *Dissacus carnifex* described.

—— 1882 FF

The recent discoveries of fossil footprints in Carson, Nev.

Amer. Naturalist, xvi, pp. 921–923.

Notice of a paper by Prof. Jos. Le Conte.

—— 1882 GG

Two new genera of *Mammalia* from the Wasatch Eocene.

Amer. Naturalist, xvi, p. 1029.

Genera *Diacodexis* and *Heptodon* established.

—— 1882 HH

Permian *Vertebrata.*

Amer. Naturalist, xvi, p. 925.

A short note.

—— 1882 II

Geological news.

Amer. Naturalist, xvi, pp. 925–926.

Mention of *Orthocynodon* of Scott and Osborn.

—— 1882 JJ

Scientific news.

Amer. Naturalist, xvi, pp. 533–534.

—— 1883 A

On a new extinct genus and species of *Percidæ* from Dakota Territory.

Amer. Jour. Sci. (3), xxv, pp. 414–416.

Cope, E. D.—Continued. 1883 B

The evidence for evolution in the history of the extinct *Mammalia.*

Science, ii, pp. 272–279.

Address at the Amer. Assoc. Adv. Science, at Minneapolis, Minn. Reprinted in *Nature*, vol. xxix, pp. 227–230, 248–250.

—— 1883 C

The structure of the skull in *Diclonius mirabilis*, a Laramie dinosaurian.

Science (1), ii, p. 338.

Abstract of paper read before Amer. Assoc. Adv. Sci.

—— 1883 D

The classification of the *Ungulata.*

Proc. Amer. Assoc. Adv. Science, 31st meeting, Montreal, 1882, pp. 477–479.

Abstract of paper read.

—— 1883 E

The fauna of the Puerco Eocene.

Proc. Amer. Assoc. Adv. Science, 31st meeting, Montreal, 1882, pp. 479–480.

Abstract of paper read before A. A. A. S.

—— 1883 F

On a new basin of White River age in Dakota.

Proc. Amer. Philos. Soc., xxi, pp. 216–217.

—— 1883 G

On the brains of the Eocene *Mammalia*, *Phenacodus* and *Periptychus.*

Proc. Amer. Philos. Soc., xx, pp. 563–565, with pl. i and ii.

Issued also as part of Pal. Bull. No. 36.

—— 1883 H

Fourth contribution to the history of the Permian formation in Texas.

Proc. Amer. Philos. Soc., xx, pp. 628–636.

Issued also as part of Pal. Bull. No. 36.

—— 1883 I

On the mutual relations of the bunotherian *Mammalia.*

Proc. Acad. Nat. Sci. Phila., 1883, pp. 77–83.

Reprinted in Ann. and Mag. Nat. Hist. (5), xii, pp. 20–26.

—— 1883 J

On the characters of the skull in the *Hadrosauridæ.*

Proc. Acad. Nat. Sci. Phila., 1883, pp. 97–107, with pls. iv–vii.

—— 1883 K

On some *Vertebrata* from the Permian of Illinois.

Proc. Acad. Nat. Sci. Phila., 1883, pp. 108–110.

Diplodus replaced by *Didymodus*; *Thoracodus emydinus* gen. et spec. nov., *Ctenodus heterolophus* sp. nov., *Ctenodus vabasensis* sp. nov., described.

Cope, E. D.—Continued. 1883 L

On the fishes of the recent and Pliocene lakes of the western part of the Great Basin, and of the Idaho Pliocene lake.

Proc. Acad. Nat. Sci. Phila., 1883, pp. 134–166, with a map of the region.

—— 1883 M

First addition to the fauna of the Puerco Eocene.

Proc. Amer. Philos. Soc., xx, pp. 545–563. Issued also as part of Pal. Bull. No. 36.

Contains descriptions of 2 new genera and 8 species; also "Note on the Mammalia of the Puerco and the origin of the quadritubercular molar."

—— 1883 N

On a new extinct genus of *Sirenia* from South Carolina.

Proc. Acad. Nat. Sci. Phila., 1883, pp. 52–54. Describes *Dioplotherium manigaulti*.

—— 1883 O

The tritubercular type of superior molar tooth.

Proc. Acad. Nat. Sci. Phila., 1883, p. 56.

—— 1883 P

Permian fishes and reptiles.

Proc. Acad. Nat. Sci. Phila., 1883, p. 69.

—— 1883 Q

On some fossils of the Puerco formation.

Proc. Acad. Nat. Sci. Phila., 1883, pp. 168–170.

—— 1883 R

On extinct *Rhinoceri* from the Southwest.

Proc. Acad. Nat. Sci. Phila., 1883, p. 301.

—— 1883 S

The extinct *Rodentia* of North America.

Amer. Naturalist, xvii, pp. 43–57, 165–174, 370–381, with 30 wood cuts in the text.

—— 1883 T

On the extinct dogs of North America.

Amer. Naturalist, xvii, pp. 235–249, with 14 wood cuts in the text.

—— 1883 U

On *Uintatherium* and *Bathmodon*.

Amer. Naturalist, xvii, p. 68.

—— 1883 V

The Nevada biped tracks.

Amer. Naturalist, xvii, pp. 69–71, with 3 figs.

Cope, E. D.—Continued. 1883 W

New *Mammalia* from the Puerco Eocene.

Amer. Naturalist, xvii, p. 191.

Notice and abstract of paper read before Amer. Philos. Soc. (Cope, 1883 M.)

—— 1883 X

A new fossil Sirenian.

Amer. Naturalist, xvii, p. 309.

Abstract of Cope, E. D., 1883 N.

—— 1883 Y

Lydekker on Indian *Mammalia*.

Amer. Naturalist, xvii, pp. 405–406.

Discusses the standing of certain genera of *Rhinocerotidæ*.

—— 1883 Z

The ancestor of *Coryphodon*.

Amer. Naturalist, xvii, pp. 406–407.

—— 1883 AA

Note on the trituberculate type of molar and the origin of the quadrituberculate.

Amer. Naturalist, xvii, pp. 407–408.

—— 1883 BB

The genus *Phenacodus*.

Amer. Naturalist, xvii, p. 535, pl. xii.

—— 1883 CC

The structure and appearance of the Laramie dinosaurian.

Amer. Naturalist, xvii, pp. 774–777, pls. xvi–xix.

Description of *Diclonius mirabilis*.

—— 1883 DD

The "third trochanter" of the dinosaurs.

Amer. Naturalist, xvii, p. 869.

Notice of observations made by M. Dollo.

—— 1883 EE

Some new *Mammalia* of the Puerco formation.

Amer. Naturalist, xvii, p. 968.

Abstract of paper, Cope, E. D., 1883 Q.

—— 1883 FF

The progress of the *Ungulata* in Tertiary time.

Amer. Naturalist, xvii, pp. 1055–1057.

Abstract of paper read before the A. A. A. S. in Minneapolis, 1883.

—— 1883 GG

A new Chondrostean from the Eocene.

Amer. Naturalist, xvii, pp. 1152, 1153.

Describes *Crassopholis magnicaudatus* gen. et spec. nov.

Cope, E. D.—Continued. 1883 HH

The Carson footprints.

Amer. Naturalist, xvii, p. 1153.

—— 1883 II

Geological notes. Tertiary.

Amer. Naturalist, xvii, pp. 970–971.

—— 1884 A

A Carboniferous genus of sharks still living.

Science, iii, p. 275.

Refers to S. Garman's *Chlamydoselachus*.

—— 1884 B

Pleuracanthus and *Didymodus*.

Science, iii, pp. 645–646.

Reply to Dr. Theo. Gill (Gill, 1884 A.).

—— 1884 C

[On the phylogeny of American artiodactyle mammals.]

Science, iv, p. 339.

Abstract of paper read before Amer. Assoc. Adv. Sci., 1884.

—— 1884 D

[On saurians of the Permian epoch.]

Science, iv, p. 340.

Abstract of paper read before Amer. Assoc. Adv. Sci., 1884.

—— 1884 E

On the trituberculate type of molar tooth in the *Mammalia*.

Proc. Amer. Assoc. Adv. Science, 32d meeting, Minneapolis, 1883, pp. 313-316.

Abstract of paper read.

—— 1884 F

On the structure of the skull in *Diclonius mirabilis*, a Laramie dinosaurian.

Proc. Amer. Assoc. Adv. Sci., 32d meeting, Minneapolis, 1883, pp. 315–316; abstract.

—— 1884 G

The extinct *Mammalia* of the Valley of Mexico.

Proc. Amer. Philos. Soc., xxii, pp. 1–21.

Also as part of Pal. Bull. No. 39.

—— 1884 H

On the structure of the feet in the extinct *Artiodactyla* of North America.

Proc. Amer. Philos. Soc., xxii, pp. 21–27.

Also as part of Pal. Bull. No. 39.

—— 1884 I

Fifth contribution to the knowledge of the fauna of the Permian Formation of Texas and the Indian Territory.

Proc. Amer. Philos. Soc., xxii, pp. 28–47, pl. i.

Also as part of Pal. Bull. No. 39.

Besides descriptions of new species, this paper discusses: The posterior foot in Pelycosauria; the structure of the columella auris in *Clepsydrops leptocephalus;* the structure of the quadrate bone in the genus *Clepsydrops;* the articulation of the ribs in *Embolophorus;* the origin of the *Mammalia;* the tarsus; phylogeny of the *Vertebrata*.

Cope, E. D.—Continued. 1884 J

On the distribution of the Loup Fork formation in New Mexico.

Proc. Amer. Philos. Soc., xxi, pp. 308–309.

Issued also as part of Pal. Bull. No. 37.

—— 1884 K

Second addition to the knowledge of the Puerco epoch.

Proc. Amer. Philos. Soc., xxi, pp. 309–324.

Issued also as part of Pal. Bull. No. 37.

—— 1884 L

On the trituberculate type of molar tooth in the *Mammalia*.

Proc. Amer. Philos. Soc., xxi, pp. 324–326.

Issued also as part of Pal. Bull. No. 37.

This paper is practically the same as Cope, 1884 E.

—— 1884 M

Synopsis of the species of *Oreodontidæ*.

Proc. Amer. Philos. Soc., xxi, pp. 503–572.

Issued also as part of Pal. Bull. No. 38.

—— 1884 N

On the structure of the skull in the elasmobranch genus *Didymodus*.

Proc. Amer. Philos. Soc., xxi, pp. 572–590, with 1 pl.

Issued also as part of Pal. Bull. No. 38.

—— 1884 O

The *Vertebrata* of the Tertiary formations of the West. Book I.

Report U. S. Geolog. Survey of the Territories, F. V. Hayden, U. S. geologist in charge, 1884, Washington, iii, pp. i-xxxv, 1-1009; pls. i-lxxva.

This work was not actually issued until the year 1885.

Reviewed in Geol. Magazine, (3) iii, pp. 410–419, 465–477, 512–521.

—— 1884 P

The *Batrachia* of the Permian period of North America.

Amer. Naturalist, xviii, pp. 26–39, with pls. ii-v and 7 woodcuts.

—— 1884 Q

The Loup Fork beds on the Gila River.

Amer. Naturalist, xviii, pp. 58–59.

Mentions finding of *Aphelops fossiger*.

—— 1884 R

On new lemuroids from Puerco formation.

Amer. Naturalist, xviii, pp. 59–62.

—— 1884 S

The *Creodonta*.

Amer. Naturalist, xviii, pp. 255–267, 344–353, 478–485, with 30 woodcuts in the text.

Cope, E. D.—Continued. 1884 T

The history of the *Oreodontidæ*.

Amer. Naturalist, xviii, pp. 280–282.

Synopsis of portion of a paper read before Amer. Philos. Society.

—— 1884 U

The skull of a still living shark of the Coal-measures.

Amer. Naturalist, xviii, pp. 412–413.

Refers *Chlamydoselachus anguineus* to *Didymodus*.

—— 1884 V

The mastodons of North America.

Amer. Naturalist, xviii, pp. 524–526.

Descriptions of 9 species.

—— 1884 W

Marsh on *Diplodocus*.

Amer. Naturalist, xviii, p. 526.

—— 1884 X

The pelvisternum of Edentates.

Amer. Naturalist, xviii, pp. 639–640.

Notice of paper by P. Albrecht.

—— 1884 Y

The Tertiary *Marsupialia*.

Amer. Naturalist, xviii, pp. 686–697, with 9 illus.

—— 1884 Z

Lydekker on extinct *Mammalia* of India.

Amer. Naturalist, xviii, pp. 617–618.

—— 1884 AA

The *Condylarthra*.

Amer. Naturalist, xviii, pp. 790–805, 892–906; pls. xxviii–xxx and 28 woodcuts in the text.

—— 1884 BB

The *Choristodera*.

Amer. Naturalist, xviii, pp. 815–817.

Remarks on paper by Dr. Lemoine on *Simædosaurus*.

—— 1884 CC

The genus *Pleuracanthus*.

Amer. Naturalist, xviii, p. 818; pl. xxiii.

Plate containing figures of *Didymodus compressus* and *D. platypterus*.

—— 1884 DD

Observations on the phylogeny of the *Artiodactyla* derived from American fossils.

Amer. Naturalist, xviii, pp. 1034–1036.

—— 1884 EE

The *Amblypoda*.

Amer. Naturalist, xviii, pp. 1110–1121, 1192–1202, with 23 woodcuts in the text.

Concluded in vol. xix, pp. 40–55.

—— 1884 FF

The origin of the *Mammalia*.

Amer. Naturalist, xviii, pp. 1136–1137.

Synopsis of paper read before the Amer. Assoc. Adv. Sci., 1884.

Cope, E. D.—Continued. 1884 GG

The structure of the columella auris in *Clepsydrops leptocephalus*.

Amer. Naturalist, xviii, pp. 1253–1255, pl. 38.

—— 1884 HH

Note on the phylogeny of the *Vertebrata*.

Amer. Naturalist, xviii, pp. 1255–1257.

—— 1884 II

The evidence for evolution in the history of the extinct *Mammalia*.

Nature, xxix, pp. 227–230, 248–250.

Abstract of lecture given before Amer. Assoc. Adv. Sci., 1884.

—— 1884 JJ

Genus *Equus*.

Fourteenth Report State Geologist Indiana, pt. ii, pp. 40–41, being an appendix to article by Cope and Wortman.

—— 1885 A

The relations between the theromorphous reptiles and the monotreme *Mammalia*.

Proc. Amer. Asso. Adv. Sci., 33d meeting, Phila., 1884, pp. 471–482, with 1 pl.

—— 1885 B

On the structure of the feet in the extinct *Artiodactyla* of North America.

Proc. Amer. Assoc. Adv. Sci., 33d meeting, Phila., 1884, pp. 482–490.

—— 1885 C

The occurrence of man in the upper Miocene of Nebraska.

Proc. Amer. Assoc. Adv. Sci., 33d meeting, Phila., 1884, p. 593; abstract.

—— 1885 D

Second continuation of researches among the *Batrachia* of the Coal-measures of Ohio.

Proc. Amer. Philos. Soc., xxii, pp. 405–408.

Also forming a portion of Pal. Bull. No. 40.

—— 1885 E

On the contents of a bone cave in the island of Anguilla (West Indies).

Smithsonian Contributions to Knowledge, xxv, article iii, pp. 1–30, pls. i–iv.

—— 1885 F

The *Amblypoda*.

Amer. Naturalist, xix, pp. 40–55, figs. 24–35.

Treats of the *Dinocerata*, and is continued from p. 1202, vol. xviii.

—— 1885 G

On the evolution of the *Vertebrata*, progressive and retrogressive.

Amer. Naturalist, xix, pp. 140–148, 234–247, 341–353.

See also Cope, E. D., 1885 AA.

Cope, E. D.—Continued. 1885 H

The White River beds of Swift Current River, Northwest Territory.

Amer. Naturalist, xix, p. 163.

—— 1885 I

The position of *Pterichthys* in the system.

Amer. Naturalist, xix, pp. 289-291, with 2 figs.

—— 1885 J

The oldest Tertiary *Mammalia*.

Amer. Naturalist, xix, pp. 385-387.

—— 1885 K

The *Lemuroidea* and the *Insectivora* of the Eocene period of North America.

Amer. Naturalist, xix, pp. 457-471, with 18 woodcuts in the text.

—— 1885 L

The mammalian genus *Hemiganus*.

Amer. Naturalist, xix, p. 492.

—— 1885 M

Mammals from the Lower Eocene of New Mexico.

Amer. Naturalist, xix, pp. 493-494.

—— 1885 N

The genera of the *Dinocerata*.

Amer. Naturalist, xix, p. 594.

—— 1885 O

Marsh on the *Dinocerata*.

Amer. Naturalist, xix, pp. 703-705.

—— 1885 P

Garman on *Didymodus*.

Amer. Naturalist, xix, pp. 878-879.

—— 1885 Q

The relations of the Puerco and Laramie deposits.

Amer. Naturalist, xix, pp. 985-986.

—— 1885 R

The ankle and skin of the dinosaur, *Diclonius mirabilis*.

Amer. Naturalist, xix, p. 1208; pl. xxxvii, figs. 1-3.

—— 1885 S

Pliocene horses of southwestern Texas.

Amer. Naturalist, xix, pp. 1208-1209; pl. xxxvii, figs. 4-6.

—— 1885 T

Mr. Lydekker on *Esthonyx*.

Geol. Magazine (3), ii, pp. 526-527.

—— 1885 U

Palæontological nomenclature.

Geol. Magazine (3), ii, pp. 572-575.

Cope, E. D.—Continued. 1885 V

The structure of the columella auris in the *Pelycosauria*.

Memoirs Nat. Acad. Sci., iii, pp. 93-95, with 5 figs. in the text.

—— 1885 W

The *Batrachia* of the Permian beds of Bohemia and the Labyrinthodont from the Bijori group (India).

Amer. Naturalist, xix, pp. 592-594.

A brief review of works by Fritsch and Lydekker.

—— 1885 X

Polemics in palæontology.

Amer. Naturalist, xix, pp. 1207-1208.

—— 1885 Y

Eocene paddle-fish and *Gonorhynchidæ*.

Amer. Naturalist, xix, pp. 1090-1091.

—— 1885 Z

A contribution to the vertebrate palæontology of Brazil.

Proc. Amer. Philos. Soc., xxiii, pp. 1-21, with pl. i.

Also as part of Pal. Bull. No. 40, pp. 1-21, with pl. i.

—— 1885 AA

The genealogy of the *Vertebrata* as learned from palæontology.

Trans. Vassar Brothers' Institute, iii, pp. 60-80.

The substance of this lecture was published in the Amer. Naturalist, xix. See Cope, E. D., 1885 G.

—— 1886 A

On the structure of the brain and auditory apparatus of a theromorphous reptile of the Permian epoch.

Proc. Amer. Assoc. Adv. Science, 34th meeting, Ann Arbor, 1885, pp. 336-341.

—— 1886 B

On two new species of three-toed horses from the upper Miocene, with notes on the fauna of the Ticholeptus beds.

Proc. Amer. Philos. Soc., xxiii, pp. 357-361.

—— 1886 C

The phylogeny of the *Camelidæ*.

Amer. Naturalist, xx, pp. 611-624, with 12 wood cuts in the text.

—— 1886 D

An interesting connecting genus of *Chordata*.

Amer. Naturalist, xx, pp. 1027-1031.

Description of *Mycterops ordinatus*.

Cope, E. D.—Continued. 1886 E

The sternum of the *Dinosauria*.

Amer. Naturalist, xx, pp. 153–154, with 2 figs. in the text.

—— 1886 F

Corrections of notes on *Dinocerata*.

Amer. Naturalist, xx, p. 155.

—— 1886 G

An extinct dog.

Amer. Naturalist, xx, p. 274.

Notice of *Pachycyon robustus* described by Dr. J. A. Allen.

—— 1886 H

The vertebrate fauna of the Ticholeptus beds.

Amer. Naturalist, xx, pp. 367–369.

—— 1886 I

The *Plagiaulacidæ* of the Puerco epoch.

Amer. Naturalist, xx, p. 451.

Describes *Neoplagiaulax molestus*.

—— 1886 J

The long-spined *Theromorpha* of the Permian epoch.

Amer. Naturalist, xx, pp. 544–545.

—— 1886 K

Schlosser on the phylogeny of the ungulate *Mammalia*.

Amer. Naturalist, xx, pp. 719–721.

Review of paper by Max Schlosser in Morphologisches Jahrbuch for 1886.

For reply to Professor Cope see Morpholog. Jahrbuch, xii, pp. 575–580.

—— 1886 L

Schlosser on *Creodonta* and *Phenacodus*.

Amer. Naturalist, xx, pp. 965–967.

Review of paper by Max Schlosser in Morpholog. Jahrbuch, 1886, p. 287.

—— 1886 M

Dollo on extinct tortoises.

Amer. Naturalist; xx, p. 967.

Review of paper by M. Dollo in Bull. Mus. Roy. Belgique, 1886, p. 75.

—— 1886 N

A giant armadillo from the Miocene of Kansas.

Amer. Naturalist, xx, pp. 1044–1046.

Describes *Caryoderma snovianum*.

—— 1886 O

The batrachian intercentrum.

Amer. Naturalist, xx, pp. 76–77.

—— 1886 P

The intercentrum in *Sphenodon*.

Amer. Naturalist, xx, p. 175.

—— 1886 Q

Note on *Phenacodus*.

Geol. Magazine (3), iii, pp. 238–239.

Cope, E. D.—Continued. 1886 R

Note on *Erisichthe*.

Geol. Magazine (3) iii, p. 239.

—— 1886 S

Edestus and *Pelecopterus*.

Geol. Magazine (3) iii, pp. 141–142.

Refers to statements in Woodward H., 1886 A regarding *Pelecopterus*, with a reply by Mr. W. Davies, F. G. S.

—— 1886 T

On two new forms of Polyodont and Gonorhynchid fishes from the Eocene of the Rocky Mountains.

Memoirs Nat. Acad. Sciences, iii, pp. 161–169, with plate containing 6 figures.

Describes *Crossopholis magnicaudatus*, *Notogoneus osculus* and *Priscacara hypsacanthus*.

See notice of this paper in Geol. Magazine, vol. v, 1888, p. 229, by A. S. Woodward.

—— 1886 U

The *Vertebrata* of the Swift Current Creek region of the Cypress Hills.

Annual Report of the Geol. and Nat. Hist. Survey of Canada, i, 1885, appendix to article C, pp. 79–85.

—— 1886 V

An analytical table of the genera of snakes.

Proc. Amer. Philos. Society, xxiii, pp. 479–499.

—— 1886 W

Report on the coal deposits near Zacualtipan, in the State of Hidalgo, Mexico.

Proc. Amer. Philos. Soc., xxiii, pp. 146–151, with 2 text figures.

In this paper are described *Hippotherium peninsulatum*, sp. nov., and *Protohippus castilli*, sp. nov., from Loup Fork shales, near Vera Cruz.

—— 1887 A

A contribution to the history of the *Vertebrata* of the Trias of North America.

Proc. Amer. Philos. Soc., xxiv, pp. 209–228, pls. i, ii.

—— 1887 B

The classification and phylogeny of the *Artiodactyla*.

Proc. Amer. Philos. Soc., xxiv, pp. 377–400.

—— 1887 C

The dinosaurian genus *Cœlurus*.

Amer. Naturalist, xxi, pp. 367–369.

—— 1887 D

The Mesozoic and Cænozoic realms of the interior of North America.

Amer. Naturalist, xxi, pp. 445–462.

Cope, E. D.—Continued. 1887 E

American Triassic *Rhynchocephalia.*

Amer. Naturalist, xxi, p. 468.

Description of *Typothorax coccinarum.*

—— 1887 F

Some new *Tæniodonta* of the Puerco.

Amer. Naturalist, xxi, p. 469.

Description of *Psittacotherium megalodus.*

—— 1887 G

The sea-saurians of the Fox Hills Cretaceous.

Amer. Naturalist, xxi, pp. 563–566.

Description of *Piptomerus megaloporus*, *P. microporus*, *P. hexagonus*, and *Orophosaurus pauciporus.*

—— 1887 H

The marsupial genus *Chirox.*

Amer. Naturalist, xxi, pp. 566–567, with 1 woodcut in the text.

—— 1887 I

Pavlow on the ancestry of Ungulates.

Amer. Naturalist, xxi, pp. 656–658.

—— 1887 J

[Note on *Belodon buceros.*]

Amer. Naturalist, xxi, pp. 659–660.

—— 1887 K

Scott and Osborn on White River *Mammalia.*

Amer. Naturalist, xxi, pp. 924–926.

Review of above author's paper, "Preliminary account of fossil mammals from the White River formation," etc., in Bull. Mus. Comp. Zool., vol. xiii.

—— 1887 L

Marsh on new fossil *Mammalia.*

Amer. Naturalist, xxi, pp. 926–927.

Review of Marsh, 1887 B.

—— 1887 M

Scott on *Creodonta.*

Amer. Naturalist, vol. xxi, p. 927.

Review of Scott in Jour. Acad. Nat. Sci., Phila., vol. ix, pp. 155–185.

—— 1887 N

The *Perissodactyla.*

Amer. Naturalist, xxi, pp. 985–1007: 1060–1076, with 41 figs. in the text.

—— 1887 O

Zittel's Manual of Palæontology.

Amer. Naturalist, xxi, pp. 1014–1019.

A review of the above work of Professor Zittel, and containing a classification of the Teleostomous fishes.

—— 1887 P

A saber-toothed tiger from the Loup Fork beds.

Amer. Naturalist, xxi, pp. 1019–1020.

Description of *Machærodus catocopis.*

Cope, E. D.—Continued. 1887 Q

Thomas on mammalian dentition.

Amer. Naturalist, xxi, pp. 1101–1103.

Review of Thomas, O., in Phil. Trans. Roy. Soc., vol. clxxviii B., pp. 443–486.

—— 1887 R

Lydekker, Boulenger, and Dollo on fossil tortoises.

Geol. Magazine (3), iv, pp. 572–573.

—— 1887 S

The origin of the fittest. Essays on evolution.

8 vo., pp. i–xx; 1–467, with 81 figs. in the text. New York, 1887.

This work is composed of 21 essays, all of which had been previously published elsewhere.

—— 1888 A

Mesozoic Realm.

Amer. Geologist, ii, pp. 261–268.

A portion of the reports of the American committee of the International Congress of Geologists.

—— 1888 B

Report of the subcommittee on the Cenozoic (Interior). Cenozoic Realm.

Amer. Geologist, ii, pp. 285–299.

A portion of the reports of the American committee of the International Congress of Geologists.

—— 1888 C

Vertebrate fauna of the Puerco series.

Science, xi, p. 198.

Abstract of paper read before the Nat. Acad. of Sci., 1888.

—— 1888 D

The mechanical origin of the sectorial teeth of the *Carnivora.*

Proc. Amer. Assoc. Adv. Sci., 36th meeting. New York, 1887, pp. 254–257.

—— 1888 E

On the *Dicotylinæ* of the John Day Miocene of North America.

Proc. Amer. Philos. Soc., xxv, pp. 62–79.

—— 1888 F

On the mechanical origin of the dentition of the *Amblypoda.*

Proc. Amer. Philos. Soc., xxv, pp. 80–88, with 6 woodcuts in the text.

—— 1888 G

On the tritubercular molar in human dentition.

Jour. Morphology, ii, pp. 7–26, pls. ii, iii.

—— 1888 H

On the relation of the hyoid and otic elements of the skeleton in the *Batrachia.*

Jour. Morphology, ii, pp. 297–310, with pls. xxii–xxiv.

Cope, E. D.—Continued. 1888 I

The mechanical causes of the origin of the dentition of the *Rodentia*.

Amer. Naturalist, xxii, pp. 3–11, with 7 woodcuts in the text.

—— 1888 J

Note on the *Marsupialia multituberculata*.

Amer. Naturalist, xxii, pp. 12–13, with 2 figs. in the text.

—— 1888 K

The vertebrate fauna of the Puerco epoch.

Amer. Naturalist, xxii, pp. 161–163.

—— 1888 L

Lydekker's Catalogue of Fossil *Mammalia* in the British Museum, Part V.

Amer. Naturalist, xxii, pp. 164–165.
Review of Lydekker R. 1887 A.

—— 1888 M

The *Multituberculata* Monotremes.

Amer. Naturalist, xxii, p. 259.

Refers to the discovery of teeth in the young of *Ornithorhynchus*, and the conclusion is reached that the *Multituberculata* are Monotremes.

—— 1888 N

Glyptodon from Texas.

Amer. Naturalist, xxii, pp. 345–346.
Describes *G. petaliferus*.

—— 1888 O

The ossicula auditus of the *Batrachia*.

Amer. Naturalist, xxii, pp. 464–467, pl. vi.

—— 1888 P

Notes on *Cœlosteus ferox* Newb. and *Titanichthys clarkii* Newb.

Amer. Naturalist, xxii, pp. 637–638.

—— 1888 Q

Topinard on the latest steps in the genealogy of man.

Amer. Naturalist, xxii, pp. 660–663.

—— 1888 R

Osborn on the Mesozoic *Mammalia*.

Amer. Naturalist, xxii, pp. 723–724, pl. xiv.
Review of Osborn, H. F., 1888 G.

—— 1888 S

Lydekker on the *Ichthyosauria* and *Plesiosauria*.

Amer. Naturalist, xxii, pp. 724–726.
Review of Lydekker, R., 1888 D.

—— 1888 T

Rütimeyer on the classification of *Mammalia*, and on American types recently found in Switzerland.

Amer. Naturalist, xxii, pp. 831–835.
Review of Rütemeyer, L. 1888 A.

Cope, E. D.—Continued. 1888 U

The pineal eye in extinct vertebrates.

Amer. Naturalist, xxii, pp. 914–917, pls. xv–xviii.

—— 1888 V

Handbuch der Palæontologie of Zittel.

Amer. Naturalist, xxii, pp. 1018–1019.
Review of Zittel, K. A. 1890 A.

—— 1888 W

Schlosser on *Carnivora*.

Amer. Naturalist, xxii, pp. 1019–1020.
Review of Schlosser, M. 1887 B.

—— 1888 X

The *Artiodactyla*.

Amer. Naturalist, xxii, pp. 1079–1095, pls. xxvii, xxviii, and 6 woodcuts in text.

—— 1888 Y

Goniopholis in the Jurassic of Colorado.

Amer. Naturalist, xxii, pp. 1106–1107.

Describes *G. lucasii* Cope, transferred from *Amphicotylus*.

—— 1888 Z

A horned dinosaurian reptile.

Amer. Naturalist, xxii, pp. 1108–1109.
Refers to Marsh, O. C. 1888 C.

—— 1888 AA

On the intercentrum of the terrestrial *Vertebrata*.

Trans. Amer. Philos. Soc., xvi, pp. 243–253, with pl. i, and 6 figs. in the text.

—— 1888 BB

Systematic catalogue of the species of *Vertebrata* found in the beds of the Permian epoch in North America, with notes and descriptions.

Trans. Amer. Philos. Soc., xvi, pp. 285–297, with pls. ii and iii, and 1 fig. in the text.

Describes as new *Ectocynodon incisivus*.

—— 1888 CC

Synopsis of the vertebrate fauna of the Puerco series.

Trans. Amer. Philos. Soc., xvi, pp. 298–361, with pls. iv and v, and 11 figs. in the text.

Contains a list of 106 species belonging to the Puerco, of which 18 are described as before unknown.

—— 1888 DD

On the shoulder girdle and extremities of *Eryops*.

Trans. Amer. Philos. Soc., xvi, pp. 362–367, with plate of 4 figs.

Cope, E. D.—Continued. 1888 EE

Schlosser on the Cænozoic marsupials and *Unguiculata*.

Amer. Naturalist, xxii, pp. 163–164.

A review of Schlosser's paper on "Affen, Lemuriden," etc.

—— 1889 A

The age of the Denver formation.

Science, xiii, p. 290.

Discusses "*Bison alticornis*" Marsh.

—— 1889 B

A review of the North American species of *Hippotherium*.

Proc. Amer. Philos. Soc., xxvi, pp. 429–458, with 3 pls.

—— 1889 C

The mechanical causes of the development of the hard parts of the *Mammalia*.

Jour. Morphology, iii, pp. 137–277, with pls. ix–xiv, and 93 cuts in the text.

—— 1889 D

The *Batrachia* of North America.

Bull. U. S. Nat. Mus. No. 34, Washington D. C., 1889, pp. 1–525; pls. i–lxxxvi.

A work on the living *Batrachia* of N. America.

—— 1889 E

Catalogue of fossil *Reptilia* and *Batrachia* of the British Museum, pt. i, by Dr. Lydekker.

Amer. Naturalist, xxiii, p. 43.

A review.

—— 1889 F

The vertebrate fauna of the Equus beds.

Amer. Naturalist, xxiii, pp. 160–165, February, not of March.

List of species found in the different localities and descriptions of *Alces brevitrabalis*, *A. semipalmatus*, and *Cariacus ensifer*.

—— 1889 G

The *Artiodactyla*.

Amer. Naturalist, xxiii, pp. 111–136; pls. iii–vii; woodcuts in the text, 7–21.

Conclusion of Cope, E. D. 1888 X. The pagination is that for March, not that for February.

—— 1889 H

Brongniart and Doederlein on *Xenacanthini*.

Amer. Naturalist, xxiii, pp. 149–150.

—— 1889 I

The *Vertebrata* of the Swift Current River. II.

Amer. Naturalist, xxiii, pp. 151–155.

Genus *Haplacodon* established for *Menodus angustigenis*. *Anchitherium westoni*, *Hypertragalus transversus*, *Leptomeryx esulcatus*, *L. mammifer*, and *L. semicinctus* described.

Cope, E. D.—Continued. 1889 J

The *Proboscidia*.

Amer. Naturalist, xxiii, pp. 191–211; 9 woodcuts; pls. ix–xvi.

Largely reproduced in Geological Magazine of London (3), vol. vi, 1889, pp. 438–448.

—— 1889 K

An intermediate Pliocene fauna.

Amer. Naturalist, xxiii, pp. 253–254.

A short list of fossil vertebrates found in a lake deposit in Oregon, and a description of *Hippotherium relictum*.

—— 1889 L

Marsh on Cretaceous mammals.

Amer. Naturalist, xxiii, pp. 490–491.

Review of Marsh, O. C. 1889 D and Marsh, O. C. 1889 F.

—— 1889 M

On a species of *Plioplarchus* from Oregon.

Amer. Naturalist, xxiii, pp. 625–626.

Description of *P. septemspinosus*.

—— 1889 N

On a new genus of Triassic *Dinosauria*.

Amer. Naturalist, xxiii, p. 626.

Genus *Cœlophysis* established for *Cœlurus longicollis*, *C. bauri*, and *C. willistoni*.

—— 1889 O

Vertebrata of Swift Current River. No. III.

Amer. Naturalist, xxiii, pp. 628–629.

—— 1889 P

The *Edentata* of North America.

Amer. Naturalist, xxiii, pp. 657–664, with pls. xxxi, xxxii and 2 woodcuts in the text.

—— 1889 Q

The horned *Dinosauria* of the Laramie.

Amer. Naturalist, xxiii, pp. 715–717, pls. xxxiii, xxxiv.

Descriptions of *Monoclonius recurvicornis*, *M. sphenocerus*, and *M. fissus*.

—— 1889 R

Synopsis of the families of *Vertebrata*.

Amer. Naturalist, xxiii, pp. 849–877.

—— 1889 S

The Silver Lake of Oregon and its region.

Amer. Naturalist, xxiii, pp. 970–982.

Contains a list of the fossil vertebrates of the region.

—— 1889 T

Notes on the *Dinosauria* of the Laramie.

Amer. Naturalist, xxiii, pp. 904–906.

Describes *Pteropelyx grallipes*, gen. et spec. nov., and *Diclonius pentagonus*.

Cope, E. D.—Continued. 1889 U

Mr. Lydekker on *Phenacodus* and the *Atheræ*.

Nature, xl, p. 298.

—— 1890 A

A. Smith Woodward on *Cœlorhynchus* Agassiz.

Amer. Naturalist, xxiv, pp. 165–166.

—— 1890 B

The homologies of the fins of fishes.

Amer. Naturalist, xxiv, pp. 401–423, pls. xiv–xviii, and 9 woodcuts in the text.

—— 1890 C

Scott and Osborn on the fauna of the Browns Park Eocene.

Amer. Naturalist, xxiv, pp. 470–472.

Review of Scott and Osborn 1890 A.

—— 1890 D

[Note on teeth mentioned by Professor Marsh.]

Amer. Naturalist, xxiv, p. 571.

—— 1890 E

The *Cetacea*.

Amer. Naturalist, xxiv, pp. 599–616, pls. xx–xxiii, and 8 wood cuts in the text.

Besides the general account of the order there is a list of North American fossil *Cetacea*.

—— 1890 F

The extinct *Sirenia*.

Amer. Naturalist, xxiv, pp. 697–702, with pls. xxv, xxvi, and 3 wood cuts in the text.

—— 1890 G

Note on *Castoroides georgiensis* Moore.

Amer. Naturalist, xxiv, p. 772.

Refers the tooth to *Hippopotamus amphibius*.

—— 1890 H

Newberry's paleozoic fishes of North America.

Amer. Naturalist, xxiv, pp. 844–847.

Review of Newberry, J. C. 1889 A.

—— 1890 I

On two new species of *Mustelidæ* from the Loup Fork Miocene of Nebraska.

Amer. Naturalist, xxiv, pp. 950–952.

Describes *Stenogale robusta* and *Brachypsalis pachycephalus*.

—— 1890 J

On a new dog from the Loup Fork Miocene.

Amer. Naturalist, xxiv, pp. 1067–1068.

Describes *Ælurodon compressus*.

—— 1891 A

On *Vertebrata* from the Tertiary and Cretaceous rocks of the Northwest Territory. I. The species from the Oligocene or Lower Miocene beds of the Cypress Hills.

Geol. Surv. Canada. Contributions to Canadian Palæontology, iii, pp. i; 1–25, with pls. i–xiv.

Cope, E. D.—Continued.

—— 1891 B

On the characters of some paleozoic fishes. I. On a new Elasmobranch from the Permian; *Styptobasis knightiana* gen. et spec. nov., fig 1. II. On new ichthyodorulites; *Hybodus regularis*, sp. nov., fig. 2;, *Ctenacanthus amblyxiphias*, sp. nov., fig. 3. III. On the cranial structure of *Macropetalichthys*. IV. On the pectoral limb of the genus *Holonema*, Newb. V. On the paired fins of *Megalichthys nitidus*, Cope. VI. On the non-actinopterygian Teleostomi. VII. On new species of *Platysomidæ*, *Platysomus palmaris* and *P. lacovianus*.

Proc. U. S. Nat. Museum, xiv, pp. 447–463, pls. xxviii–xxxiii.

—— 1891 C

On the structure of certain paleozoic fishes.

Proc. Amer. Assoc. Adv. Science, 39th meeting, Indianapolis, 1890, p. 336.

Abstract of paper describing *Macropetalichthys*, *Megalichthys nitidus*, a species of *Platysomus*, and a species of *Dendrodus*.

—— 1891 D

On two new Perissodactyls from the White River Neocene.

Amer. Naturalist, xxv, pp. 47–49.

Describes *Menodus peltoceras* and *Cænopus simplicidens*.

—— 1891 E

On the non-actinopterygian *Teleostomi*.

Amer. Naturalist, xxv, pp. 479–481.

—— 1891 F

Catalogue of fossil *Reptilia* and *Batrachia* (*Amphibia*) in the British Museum. Parts II, III, and IV.

Amer. Naturalist, xxv, pp. 644–646.

A review of the above works of Dr. R. Lydekker.

—— 1891 G

A. S. Woodward's Fossil fishes.

Amer. Naturalist, xxv, pp. 646–647.

An editorial notice of A. D. Woodward's Catalogue of fossil fishes in the British Museum.

Cope, E. D.—Continued. 1891 H

On some new fishes from South Dakota.

Amer. Naturalist, xxv, pp. 654–658.

Describes three new genera (*Gephyura*, *Probalostomus* and *Oligoplarchus*, and five new species.

—— 1891 I

Boulenger on *Rhynchocephalia*, *Testudinata*, and *Crocodilia*.

Amer. Naturalist, xxv, pp. 813–814.

—— 1891 J

On the skull of the *Equus excelsus*, Leidy, from the Equus beds of Texas.

Amer. Naturalist, xxv, pp. 912–913.

—— 1891 K

The California cave bear.

Amer. Naturalist, xxv, pp. 997–999, with pl. xxi.

—— 1891 L

Flower and Lydekker's mammals.

Amer. Naturalist, xxv, pp. 1116–1118.

A review of the above authors' work on mammals.

—— 1891 M

Discovery of fish remains in Ordovician rocks.

Amer. Naturalist, xxv, p. 137.

A brief editorial note regarding C. D. Walcott's discovery of fish remains in Colorado.

—— 1891 N

Syllabus of lectures on geology and palæontology.

Pp. 1–90, with 60 figs. in the text. Philadelphia, 1891.

—— 1892 A

In the Texas Panhandle.

Amer. Geologist, x, pp. 131–132.

—— 1892 B

On a new horizon of fossil fishes.

Proc. Amer. Assoc. Adv. Sci., 40th meeting, Washington, 1891, p. 285.

Abstract of paper regarding fishes described from South Dakota in Amer. Naturalist, 1891, p. 654.

—— 1892 C

On the cranial characters of *Equus excelsus*.

Proc. Amer. Assoc. Adv. Sci., 40th meeting, Washington, 1891, p. 285. Abstract.

—— 1892 D

On a new form of *Marsupialia* from the Laramie formation.

Proc. Amer. Assoc. Adv. Sci., 41st meeting, Rochester, 1892, p. 177.

Describes genus *Thlæodon*.

Cope, E. D.—Continued. E 1892

Report on the palæontology of the *Vertebrata* [of Texas].

Geol. Surv. of Texas, 3d annual report, for 1891. Austin, 1892; pp. 251–259.

—— 1892 F

The osteology of the *Lacertilia*.

Proc. Amer. Philos. Soc., xxx, pp. 185–221, with pls. ii–vi.

—— 1892 G

A contribution to a knowledge of the fauna of the Blanco beds of Texas.

Proc. Acad. Nat. Sci. Phila., 1892, pp. 226–229.

—— 1892 H

On the permanent and temporary dentitions of certain three-toed horses.

Proc. Acad. Nat. Sci. Phila., 1892, pp. 325–326.

—— 1892 I

A hyæna and other *Carnivora* from Texas.

Proc. Acad. Nat. Sci. Phila., 1892, pp. 326–327.

—— 1892 J

A contribution to the vertebrate palæontology of Texas.

Proc. Amer. Philos. Soc., xxx, pp. 123–131.

—— 1892 K

On the skull of the dinosaurian *Lælaps incrassatus* Cope.

Proc. Amer. Philos. Soc., xxx, pp. 240–245.

—— 1892 L

On some new and little known Palæozoic vertebrates.

Proc. Amer. Philos. Soc., xxx, pp. 221–229, with pls. vii and viii.

—— 1892 M

On some points in the kinetogenesis of limbs.

Proc. Amer. Phil. Soc., xxx, pp. 282–285.

—— 1892 N

On the phylogeny of the *Vertebrata*.

Proc. Amer. Philos. Soc., xxx, pp. 278–279, with 2 figs. in the text.

—— 1892 O

Remarks on the communication "Ein fossiler Giftzahn," by Dr. F. Kinkelin.

Zoolog. Anzeiger, xv, p. 224.

Refers to discoveries of the poison-fangs of serpents earlier than Kinkelin's.

—— 1892 P

The age of the staked plains of Texas.

Amer. Nat., xxvi, pp. 49–50.

Refers to occurrence of *Equus simplicidens*, *Mastodon*, and *Testudo turgida*.

Cope, E. D.—Continued. 1892 Q

Fossil *Vertebrata.*

Amer. Nat., xxvi, pp. 89–91.

Abstract of paper read before the American Society of Naturalists at Philadelphia, Dec., 1891.

—— 1892 R

The homologies of the cranial arches of the *Reptilia.*

Amer. Nat., xxvi, pp. 407–408, with pls. xv–xvii.

Abstract of paper read before U. S. Nat. Acad. Sciences, Apr. 19, 1892. Full paper in Trans. Amer. Philos. Soc., 1892, pp. 11–16.

—— 1892 S

Professor Marsh on extinct horses and other mammals.

Amer. Naturalist, xxvi, pp. 410–412.

Review of Marsh, O. C. 1892 C, and Marsh, O. C. 1892 D.

—— 1892 T

Fourth note on the *Dinosauria* of the Laramie.

Amer. Naturalist, xxvi, pp. 756–758.

—— 1892 U

On a new genus of *Mammalia* from the Laramie formation.

Amer. Naturalist, xxvi, pp. 758–762; pl. xxii.

Describes *Thlæodon padanicus*, belonging to new family *Thlæodontidæ.*

—— 1892 V

Crook on *Saurodontidæ* from Kansas.

Amer. Naturalist, xxvi, pp. 941–942.

Notice of Crook, A. R. 1892 A.

—— 1892 W

On the permanent and temporary dentitions of certain three-toed horses.

Amer. Naturalist, xxvi, pp. 942–944, pls. xxv, xxvi.

—— 1892 X

American Devonian fishes found in Belgium.

Amer. Naturalist, xxvi, p. 1025.

Notice of paper by M. Lohest in Ann. Soc. Géol. de Belgique, xvi, p. lvii.

—— 1892 Y

A Hyena and other *Carnivora* from Texas.

Amer. Naturalist, xxvi, pp. 1028–1029.

Describes *Borophagus diversidens, Canimartes cumminsii*, and *Felis hillianus.*

—— 1892 Z

On the homologies of the posterior cranial arches in the *Reptilia.*

Trans. Amer. Philos. Soc., xvii, pp. 11–26; with pls. i–v.

Cope, E. D.—Continued. 1892 AA

Vertebrate fauna of the Alachua clays, Florida.

Bull. U. S. Geol. Surv., No. 84, Correlation papers, Neocene, p. 130.

—— 1892 BB

The fauna of the Blanco epoch.

Amer. Naturalist, xxvi, pp. 1058–1059.

—— 1893 A

A preliminary report on the vertebrate paleontology of the Llano Estacado.

From 4th Annual Report of the Geological Survey of Texas, pp. 1–136; pls. i–xxiii.

Notice of, in Amer. Naturalist, vol. xxvii, pp. 811–812.

—— 1893 B

A new extinct species of *Cyprinidæ.*

Proc. Acad. Nat. Sci. Phila., 1893, pp. 19–20.

Describes *Aphelichthys lindahli* from Illinois.

—— 1893 C

Description of the lower jaw of *Tetrabelodon shepardii.*

Proc. Acad. Nat. Sci. Phila., 1893, pp. 202–204.

—— 1893 D

Fossil fishes from British Columbia.

Proc. Acad. Nat. Sci. Phila., 1893, pp. 401–402.

—— 1893 E

On the genus *Tomiopsis.*

Proc. Amer. Philos. Soc. xxxi, pp. 317–318.

—— 1893 F

Kansas pterodactyls.

Amer. Naturalist, xxvii, p. 37.

A notice of a paper on the subject by Professor Williston, in Kansas Univ. Quarterly, July, 1892.

—— 1893 G

A remarkable artiodactyle from the White River epoch.

Amer. Naturalist, xxvii, pp. 147–148, pl. i, ii.

Notice of paper Osborn and Wortman 1892 B.

—— 1893 H

Earle on the species of *Coryphodontidæ.*

Amer. Naturalist, xxvii, pp. 250–252.

Review of Earle, Charles, 1892 A.

—— 1893 I

The vertebrate fauna of the Ordovician of Colorado.

Amer. Naturalist, xxvii, pp. 268–269.

Notice of discoveries of fish remains by C. D. Walcott.

—— 1893 J

The genealogy of man.

Amer. Naturalist, xxvii, pp. 321–335, pl. ix, and 9 figs. in the text.

Cope, E. D.—Continued. 1893 K

A new Pleistocene saber-tooth.

Amer. Naturalist, xxvii, pp. 896–897.

Describes *Dinobastis serus*.

—— 1893 L

On *Symmorium* and the position of the cladodont sharks.

Amer. Naturalist, xxvii, pp. 999–1001.

—— 1893 M

Forsyth Major, and Röse on the theory of dental evolution.

Amer. Naturalist, xxvii, pp. 1014–1016.

—— 1893 N

Fritsch's Fauna of the Gaskohle of Bohemia.

Amer. Naturalist, xxvii, pp. 1079–1081, with pls. xix, xx, and 1 fig. in the text.

One plate and the text figure illustrate *Xenacanthus decheni*.

—— 1893 O

Cladodont sharks of the Cleveland shale.

Amer. Naturalist, xxvii, p. 1083.

An editorial notice of Professor Claypole's paper in Amer. Geologist for May, 1893.

—— 1893 P

Geology and paleontology, Cenozoic.

Amer. Naturalist, xxvii, p. 473, with pl. xii.

Announces exhibition of mandible of *Tetrabelodon shepardii* and proposal of *Mastodon oligobunis*:

—— 1893 Q

The vertebrate paleontology of the Llano Estacado.

Amer. Naturalist, xxvii, pp. 811, 812.

A notice of the author's report (Cope, E. D. 1893 A), on the palæontology of Texas.

—— 1893 R

Cary on evolution of foot structure.

Amer. Naturalist, xxvii, pp. 248–250.

—— 1894 A

Observations on the geology of adjacent parts of Oklahoma and northwest Texas.

Proc. Acad. Nat. Sci. Phila., 1894, pp. 63–68.

—— 1894 B

On the structure of the skull in the plesiosaurian *Reptilia* and on two new species from the upper Cretaceous.

Proc. Amer. Philos. Soc., xxxiii, pp. 109–113, with pl. x and 1 fig. in the text.

Describes *Embaphias circulosus* gen. et sp. nov. and *Elasmosaurus intermedius*.

—— 1894 C

Seeley on the fossil reptiles: II. *Pareiasaurus;* VI. The *Anomodontia* and their allies; VII. Further observations on *Pareiasaurus*.

Amer. Naturalist, xxviii, pp. 788–790.

A review of Seeley's papers on the above subjects in Philos. Trans. Roy. Soc., 1888, 1889.

—— 1894 D

Scott on the *Mammalia* of the Deep River Beds.

Amer. Naturalist, xxviii, pp. 790-791.

A review of Scott's memoir in Trans. Amer. Philos. Soc., xviii, pp. 55–184.

—— 1894 E

Marsh on Tertiary *Artiodactyla*.

Amer. Naturalist, xxviii, pp. 867–869.

A review of Marsh, O. C. 1894 K.

—— 1894 F

New and little known Paleozoic and Mesozoic fishes.

Jour. Acad. Nat. Sci. Phila., (2), ix, pp. 427–448; pls. xviii–xx, with 5 figs. in the text.

—— 1894 G

On *Cyphornis*, an extinct genus of birds.

Jour. Acad. Nat. Sci. Phila., (2), ix, pp. 449–452; pl. xx, 11–16.

Describes *Cyphornis magnus*, gen. et sp. nov., from Vancouvers Island.

—— 1894 H

Extinct *Bovidæ*, *Canidæ*, and *Felidæ* from the Pleistocene of the Plains.

Jour. Acad. Nat. Sci. Phila., (2), ix, pp. 453–459; pls. xxi–xxii.

—— 1894 I

Schlosser on American Eocene *Vertebrata* in Europe.

Amer. Naturalist, xxviii, pp. 594–595.

A review of Schlosser 1894 A.

—— 1895 A

Fourth contribution to the marine fauna of the Miocene period of the United States.

Proc. Amer. Philos. Soc., xxxiv, pp. 135–155, with pl. vi.

Note on, in Amer. Naturalist, vol. xxix, p. 572.

—— 1895 B

Dean on coprolites.

Amer. Naturalist, xxix, p. 159.

Remarks on Bashford Dean's paper in Trans. N. Y. Acad. Sci., vol. xiii, 1894.

—— 1895 C

Baur on the temporal part of the skull, and on the morphology of the skull in the *Mosasauridæ*.

Amer. Naturalist, xxix, pp.558–859; pl. xxxi.

Review of Baur's papers in Anatomischer Anzeiger, x, p. 316, and Amer. Jour. Morphology, 1894, p. 1.

Cope, E. D.—Continued. 1895 D

A batrachian armadillo.

Amer. Naturalist, xxix, p. 998.

Description of *Dissorophus multicinctus.*

—— 1895 E

Reply to Dr. Baur's critique on my paper on the paroccipital bone of the scaled reptiles and the systematic position of the *Pythonomorpha.*

Amer. Naturalist, xxix, pp. 1003–1005.

—— 1895 F

The fossil vertebrates from the fissure at Port Kennedy, Pa.

Proc. Acad. Nat. Sci. Phila., 1895, pp. 446–451.

—— 1895 G

The antiquity of man in North America.

Amer. Naturalist, xxix, pp. 593–599.

Discusses the occurrence of various mammals in caves and other Pleistocene deposits.

—— 1895 H

Taylor on box tortoises.

Amer. Naturalist, xxix, pp. 756–757.

Subdivides the genus *Terrapene* into various genera, among which is *Toxaspis.*

—— 1896 A

Criticism of Dr. Baur's rejoinder on the homologies of the paroccipital bone, etc.

Amer. Naturalist, xxx, pp. 147–149, with 2 figs. in the text.

—— 1896 B

Boulenger on the difference between *Lacertilia* and *Ophidia;* and on the *Apoda.*

Amer. Naturalist, xxx, pp. 149–152.

—— 1896 C

The Paleozoic reptilian order *Cotylosauria.*

Amer. Naturalist, xxx, pp. 301–304, with pl. vii a.

Describes *Pariotichus aguti.*

—— 1896 D

The ancestry of the *Testudinata.*

Amer. Naturalist, xxx, pp. 398–400.

Describes new family *Otocœlidæ,* new genera *Otocœlus* and *Conodectes,* and new species *O. testudineus* and *C. favosus.*

—— 1896 E

Permian land *Vertebrata* with carapaces.

Amer. Naturalist, xxx, pp. 936–937, with pls. xxi, xxii.

Descriptions and figures of *Otocœlus testudineus* and *Dissorhophus articulatus.*

—— 1896 F

New and little known *Mammalia* from the Port Kennedy bone deposit.

Proc. Acad. Nat. Sci. Phila., 1896, pp. 378–394.

Cope, E. D.—Continued. 1896 G

The reptilian order *Cotylosauria.*

Proc. Amer. Philos. Soc., xxxiv, pp. 436–457, with pls. vii–ix.

Besides the *Cotylosauria,* some new *Batrachia* from the Permian beds of Texas are described in a supplement, pp. 452–457.

—— 1896 H

On some Pleistocene *Mammalia* from Petite Anse, La.

Proc. Amer. Philos. Soc., xxxiv, pp. 458–468, with pls. x–xii.

—— 1896 I

Second contribution to the history of the *Cotylosauria.*

Proc. Amer. Philos. Soc., xxxv, pp. 122–139, with pls. vii–x.

Included in this paper is an "Appendix on a species of *Trimerorhachis.*" The paper is a continuation of Cope, 1896 G.

—— 1896 J

Sixth contribution to the knowledge of the marine Miocene fauna of North America.

Proc. Amer. Philos. Soc., xxxv, pp. 139–146, with pls. xi, xii.

—— 1897 A

Recent papers relating to vertebrate paleontology.

Amer. Naturalist, xxxi, pp. 315–323.

A notice of papers by Baur, Baur and Case, Goette, Hay, Wortman, and Marsh.

—— 1897 B

The position of the *Periptychidæ.*

Amer. Naturalist, xxxi, pp. 335–336.

Reviewed by M. Schlosser, Neues Jahrb. Min., 1901, i, p. 149.

—— 1897 C

On new Paleozoic *Vertebrata* from Illinois, Ohio, and Pennsylvania.

Proc. Amer. Philos. Soc., xxxvi, pp. 71–90, with pls. i–iii.

—— 1898 A

[A communication written Oct. 28, 1870, to Prof. B. F. Mudge.]

The University Geological Survey of Kansas, iv, pp. 29–30.

This letter, now first published, refers to a collection of fossils which had been submitted to Prof. Cope for examination.

—— 1898 B

Syllabus of lectures on the *Vertebrata.*

Philadelphia, 1898. 8 vo., pp. 1–135, with portrait of the author and 66 figs. in the text; preceded by an essay by Dr. H. F. Osborn on "The life and works of Cope."

—— 1899 A

Vertebrate remains from Port Kennedy bone deposit.

Jour. Acad. Nat. Sci. Phila., (2), xi, pp. 193–267, with pls. xviii–xxi.

Cope, E. D.—Continued. 1900 A

The crocodilians, lizards, and snakes of North America.

Ann. Report Smithson. Inst. for 1898, U. S. Nat. Museum, part ii, pp. 153–1270, with pls. i–xxxv and 347 figs. in the text.

Cope, E. D., and **Wortman**, J. L. 1884 A

Post-pliocene vertebrates of Indiana.

14th Report State Geologist of Indiana, pt. ii, pp. 1–62, with pls. i–vi.

Cornevin, Charles. 1882 A

Nouveaux cas de didactylie chez le cheval et enterprétation de le polydactylie des Équidés en général.

Assoc. Française pour l'advancement des Sciences, 10e session, Alger, 1881, pp. 669–675.

Cornuel, J. 1877 A

Description de débris de poissons fossiles provenant principalement du calcaire néocomien du département de la Haute Marne.

Bull. Soc. Géol. France (3), v, pp. 604–626, with pl. xi.

Cottle, Thomas. 1852 A

Fossil *Pachydermata* in Canada.

Ann. and Mag. Nat. Hist. (2), x, pp. 395–396.

Records the finding of bones and tusk of *Elephas primigenius?*, Burlington Heights, near head of Lake Ontario.

—— 1853 A

On fossil *Pachydermata* in Canada.

Amer. Jour. Sci. (2), xv, pp. 282–283.

Taken from Ann. and Mag. Nat. Hist. (2), x, 395.

Coues, Elliott. 1866 A

The osteology of the *Colymbus torquatus*, with notes on its myology.

Memoirs Bost. Soc. Nat. Hist., i, pp. 131–172, with pl. v.

—— 1869 A

The great auk.

Amer. Naturalist, iv, p. 57.

—— 1872 A

Osteology and myology of *Didelphys virginiana*.

Memoirs Bost. Soc. Nat. Hist., ii, pp. 41–149, with 35 figs. in the text.

—— 1872 B

Key to North American birds.

Pp. 1–361, with 6 pls. and 238 figs. in the text.

A synopsis of the fossil forms of North American birds is given on pp. 347–350.

—— 1875 A

On the cranial and dental characters of *Mephitinæ*, with descriptions of *Mephitis frontata* n. sp. foss.

Bull. U. S. Geol. and Geog. Surv. Terr., 2d ser., No. 1, pp. 7–15.

Coues, Elliott—Continued. 1875 B

A critical review of the North American *Saccomyidæ*.

Proc. Acad. Nat. Sci. Phila., xxvii, pp. 272–327.

—— 1875 C

Synopsis of the *Geomyidæ*.

Proc. Acad. Nat. Sci. Phila., xxvii, pp. 130–138.

—— 1876 A

Some account, critical, descriptive, and historical, of *Zapus hudsonius*.

Bull. U. S. Geol. and Geog. Surv. Terr. (Hayden), i, ser. 2, No. 5, pp. 253–262.

Gives full synonomy and dental and cranial characters.

—— 1877 A

Fur-bearing animals; a monograph of the North American *Mustelidæ*.

Miscellaneous pubs., No. 8, U. S. Geol. and Geog. Surv., under F. V. Hayden, pp. i–xiv; 1–348, with pls. i–xx.

—— 1877 B

Monographs of North American *Rodentia*.

Report U. S. Geol. and Geog. Surv. Terr., F. V. Hayden, U. S. geologist in charge, vol. xi.

No. i, *Muridæ*, pp. 1–264, with pls. i–v; No. vii, *Zapodidæ*, pp. 455–479; No. viii, *Saccomyidæ*, pp. 481–542; No. x, *Geomyidæ*, pp. 601–630.

—— 1878 A

On consolidation of the hoofs in the Virginian deer.

Bull. U. S. Geol. and Geog. Surv. Terr., 1878, iv, pp. 293–294.

—— 1878 B

On a breed of solid-hoofed pigs apparently established in Texas.

Bull. U. S. Geol. and Geog. Surv. Terr., 1878, iv, pp. 295–297.

—— 1884 A

Key to North American birds. 2d edition.

Pp. i–xxx; 1–863, with 561 figs. in the text.

Part ii of this work contains an excellent account of the anatomy of birds, including the osteology. Part iv is a "Systematic Synopsis of the Fossil Birds of America." This synopsis has remained unchanged in the 3d and 4th editions and the various reissues of these up to 1896.

See also **Gill** and **Coues**.

Couper, J. Hamilton. 1842 A

Letter regarding fossil bones found in Georgia.

Proc. Acad. Nat. Sci. Phila., i, pp. 216–217.

Records finding of bones of *Megatherium*, *Mastodon*, a species of *Bos*, etc. A list of these bones is found on page 190 of the same volume.

Couper, J. Hamilton—Continued.
See note under **Hodson** W. B. 1846 A.

Cox, E. T. 1874 A

Collettosaurus indianaensis Cox.

Fifth Ann. Rep. Geol. Surv. Indiana, made during the year 1873, pp. 247-248, with 1 pl.

Cragin, F. W. 1888 A

Preliminary description of a new or little known saurian from the Benton of Kansas.

Amer. Geologist, ii, pp. 404-407.

Trinacromerum bentonianum is described.

—— 1891 A

New observations on the genus *Trinacromerum*.

Amer. Geologist, viii, pp. 171-174.

—— 1892 A

Observations on llama remains from Colorado and Kansas.

Amer. Geologist, ix, pp. 257-260.

—— 1892 B

A new saber-toothed tiger from the Loup Fork Tertiary of Kansas.

Science, xix, p. 17.

Describes *Machærodus crassidens*.

—— 1894 A

Vertebrates from the Neocomian shales of Kansas.

Colorado College Studies, v, pp. 69-73, pls. i, ii.

Describes as new species *Plesiosaurus mudgei*, *Plesiochelys belvidcrensis*, *Lamna ? quinquelateralis*, and *Hybodus clarkensis*.

—— 1896 A

Preliminary notice of three late Neocene terranes of Kansas.

Colorado College Studies, vi, pp. 53-54.

Records finding of various vertebrate remains, among which are named *Elephas imperator* (?), *Megalonyx leidyi*, *Equus complicatus*, *E. curvidens*, *Auchenia huerfanensis*.

—— 1899 A

Goat-antelope from the cave fauna of Pikes Peak region.

Bull. Geol. Soc. Amer., xi, pp. 610-612, with pl. lvii.

Presents a description of *Nemorhædus palmeri* Crag.

—— 1900 A

The capricorns, mammals of an Asiatic type, former inhabitants of the Pikes Peak region.

Colorado College Studies, viii, pp. 1-6, with 1 text fig.

A popular account of *Nemorhædus palmeri* Crag.

Cramer, Frank. 1895 A

On the cranial characters of the genus *Sebastodes*.

Proc. California Acad. Sci. (2), v, pp. 573-610, with pls. lvii-lxx.

The plates consist of drawings of skulls of the different species.

Credner, Hermann. 1870 A

Die Kreide von New Jersey.

Zeitschrift deutsch. geol. Gesellschaft, xxii, pp. 191-251, with map.

Mentions occurrence of *Otodus appendiculatus*, *Corax heterodon*, *Oxyrhina mantelli*, *Lamna texana*, *Coprolithus* (*Macropoma*) *mantelli*, *Hyposaurus rogersi*, *Hadrosaurus foulkii*, and *Mosasaurus mitchelli*.

—— 1881 A

Die Stegocephalen (Labyrinthodonten) aus dem Rothliegenden des Plauen'schen Grundes bei Dresden.

Zeitschr. deutsch. geol. Gesellsch., xxxiii; Erster Theil, pp. 298-330, pls. xv-xviii; Zweiter Theil, pp. 574-603, pls. xxii-xxiv. Describes *Branchiosaurus*.

—— 1881 B

Ueber einige Stegocephalen (Labyrinthodonten) aus dem sächsichen Rothliegenden.

Sitzungsber. naturf. Gesellsch. Leipzig, 1881, pp. 1-7.

Contains some remarks on *Branchiosaurus*.

—— 1882 A

Die Stegocephalen aus dem Rothliegenden des Plauen'schen Grundes bei Dresden; iii Theil.

Zeitschr. deutsch. geol. Gesellsch., xxxiv, pp. 213-237, with pls. xii, xiii.

Describes *Pelosaurus* and *Archegosaurus*.

—— 1883 A

Die Stegocephalen aus dem Rothliegenden des Plauen'schen Grundes bei Dresden; iv Theil.

Zeitschr. deutsch. geol. Gesellsch., xxxv, pp. 275-300, with pls. xi, xii.

—— 1884 A

[Remarks on *Branchiosaurus amblystomus*.]

Zeitschr. deutsch, geol. Gesellsch., xxxvi, pp. 685-686.

Regards *Branchiosaurus* as equivalent to *Protriton*, but retains former name.

—— 1885 A

Die Stegocephalen aus dem Rothliegenden des Plauen'schen Grundes bei Dresden.

Zeitschr. deutsch. geol. Gesellsch., xxxvii, pp. 694-736, with pls. xxvii-xxix.

Treats of *Melanerpeton*, *Pelosaurus*, *Archegosaurus*, *Hylonomus*, etc.

Credner, Hermann—Continued. 1886 A

Die Stegocephalen aus dem Rothliegenden des Plauen'schen Grundes bei Dresden.

Zeitschr. der deutsch. geol. Gesellsch., xxxviii, pp. 576–632, with pls. xvi–xix and 13 figs. in the text.

Treats of the development of *Branchiosaurus.*

—— 1887 A

Stegocephalen des Rothliegenden. Two plates, 70 by 90 cm., with "Erlaüterungen zu den Wandtafeln; Stegocephalen des Rothliegenden."

Pp. 1–10, with 3 figs. in the text.

Presents illustrations of the structure of *Branchiosaurus, Pelosaurus,* and *Melanerpeton.*

—— 1888 A

Die Stegocephalen und Saurier aus dem Rothliegenden des Plauen'schen Grundes bei Dresden; vii Theil; *Palæohatteria longicaudata* Crd.

Zeitschr. deutsch. geol. Gesellsch., xl, pp. 490–558, with pls. xxiv–xxvi and 24 text figs.

—— 1889 A

Die Stegocephalen und Saurier aus dem Rothliegenden des Plauen'schen Grundes bei Dresden; viii Theil. *Kadaliosaurus priscus* Cred.

Zeitschr. deutsch. geol. Gesellsch., xli, pp. 319–342, with pl. xv and 5 text figs.

—— 1890 A

Die Stegocephalen und Saurier aus dem Rothliegenden des Plauen'schen Grundes bei Dresden; ix Theil.

Zeitschr. deutsch. geol. Gesellsch., xlii, pp. 240–277, with pls. ix–xi and 6 text figs.

Describes *Hylonomus* and *Petrobates.*

—— 1893 A

Zur Histologie der Faltenzähne paläozoischer Stegocephalen.

Abhandl. math.-phys. Classe k. sächs. Gesellsch. Wissensch. Leipzig, xx, pp. 477–552, with pls. i–iv and 5 text figs.

This important paper treats of the histology of the genus *Sclerocephalus.*

Crook, Alja Robinson. 1892 A

Ueber einige fossile Knochenfische aus der mittleren Kreide von Kansas.

Palæontographica, xxxix, pp. 107–124, with pls. xv–xviii.

Croom, H. B. 1835 A

Some account of the organic remains found in the marl pits of Lucas Benners, esq., in Craven County, N. C.

Amer. Jour. Sci., xxvii, pp. 168–171.

Cunningham, John. 1839 A

An account of the footsteps of the *Chirotherium.*

Proc. Geol. Soc. Lond., iii, pp. 12–14.

Cunningham, Robt. O. 1871 A

Notes on some points in the osteology of *Rhea americana* and *Rhea darwini.*

Proc. Zool. Soc. Lond., 1871, pp. 105–110, with pls. vi and vi *a.*

Cuvier, Georges. 1799 A

Mémoir sur les espèces d'éléphans vivants et fossiles.

Mém. de l'Institut Nat. Sci. et Arts, ii, pp. 1–22, pls. ii–vi.

—— 1804 A

Sur le Mégalonix, animal de la famille des Paresseux, mais de la taille de bœuf, dont les ossemens ont été découvertes en Virginie, en 1796.

Ann. Mus. d'Hist. Nat., v, pp. 358–376, with pl. xxiii.

—— 1804 B

Sur le *Megatherium,* autre animal de la famille des Paresseux, mais de la taille du rhinocéros, dont un squelette fossile presque complet est conservé au cabinet royal d'historie naturelle à Madrid.

Ann. Mus. d'Hist. Nat., v, pp. 376–387, with pls. xxiv, xxv.

—— 1806 A

Sur les elephans vivants et fossiles.

Ann. Mus. d'Hist. Nat., viii, pp. 1–58, 93–155, 249–269, with pls. xxxviii–xlv.

—— 1806 B

Sur le grand mastodonte.

Ann. Mus. d'Hist. Nat., viii, pp. 270–312, with pls. xlix–lvi.

—— 1806 C

Sur différentes dents du genre des mastodontes, mais d'espèces moindres que celles de l'Ohio, trouvées en plusieurs lieux des deux continens.

Ann. Mus. d'Hist. Nat., viii, pp. 401–420, with pls. lxvi–lxix.

—— 1808 A

Sur le grand animal des carrières de Maestricht.

Ann. Mus. d'Hist. Nat., Paris, xii, pp. 145–178, with pls. xviii, xix.

—— 1808 B

Sur les os fossiles de ruminans trouvés dans les terrains meubles.

Ann. Mus. d'Hist. Nat., Paris, xii, pp. 333–398, with pls. xxxii–xxxiv.

Refers to and figures *Bison latifrons* under the name Aurochs.

Cuvier, Georges—Continued. 1834 A

Recherches sur les ossemens fossiles, ou l'on rétablit les caractères de plusieurs animaux dont les révolutions du globe ont detruit les espèces.

Fourth edition, Paris, 1834-1836, vols. i-x, octavo, with 2 vols. quarto, containing 260 pls.

First edition was published in 1812, second edition in 1821, third edition in 1825.

Daily State Journal. 1870 A

Discovery of a mastodon.

Amer. Jour. Sci. (2), l, pp. 422-423.

Extract from Daily State Journal, Springfield, Ill.

Dall, William H. 1869 A

[Statement concerning the finding of the bones of musk ox, buffalo, and elephant near Yukon River.]

Proc. Boston Soc. Nat. Hist., xiii, p. 136.

—— 1873 A

[Remarks on tusks and bones from Kotzebue Sound.]

Proc. California Acad. Nat. Sci., iv, pp. 293-294.

—— 1891 A

Age of the Peace Creek bone beds of Florida.

Proc. Acad. Nat. Sci. Phila., 1891, p. 121.

Dames, W. 1882 A

On the structure of the head of *Archæopteryx*.

Geol. Magazine (2) ix, pp. 566-568.

See also Sitzungsber, k.-p. Akad. Wissensch. Berlin, Jahrg. 1882, pp. 817-819.

—— 1883 A

Ueber *Ancistrodon* Debey.

Zeitschr. deutsch. geol. Gesellsch., xxxv, pp. 655-670, with pl. xix.

—— 1883 B

Ueber eine tertiäre Wirbelthierfauna von der westlichen Insel der Birket-el-Qurūn, im Fajcim (Aegypten).

Sitzungsber. k.-p. Akad. Wissensch. Berlin, pp. 129-153, with pl. iii.

—— 1884 A

Entgegnung an Herrn Dr. Baur.

Morpholog. Jahrbuch, x, pp. 603-612.

Reply to Baur, G. 1884 B.

—— 1884 B

Ueber *Archæopteryx*.

Palæontolog. Abhandl., ii, pp. 117-196 (1-80), with 1 pl. and 5 woodcuts.

—— 1885 A

[Review of A. von Koenen's "Beiträge zur Kenntniss der Placodermen des Norddeutschen Oberdevons," published in Abhandlungen der k. Gesellsch. Wissensch Göttingen, xxx, pp. 1-40.]

Neues Jahrbuch Min., Geol., u. Palæont., 885, i, Referate, pp. 97-98.

—— 1887 A

Ueber die Gattung *Saurodon*.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1887, pp. 72-78.

—— 1887 B

Über *Titanichthys pharao*, nov. gen., nov. sp., aus der Kreideformation Aegyptens.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1887, pp. 69-72, with 4 figs. in the text.

Discusses systematic position of *Enchodus*.

—— 1893 A

Ueber das Vorkommen von Ichthyopterygiern im Tithon Argentiniens.

Zeitschr. deutsch. geol. Gesellsch., xlv, pp. 23-33, with pl. i.

—— 1894 A

Die Chelonier der norddeutschen Tertiärformation.

Palæontolog. Abhandl., vi, pp. 197-220, with pls. xxvi-xxix.

—— 1894 B

Ueber Zeuglodonten aus Aegypten und die Beziehungen der Archæoceten zu den übrigen Cetaceen. I, Beschreibung der Fossilreste; II, Vergleich der ägyptischen Zeuglodon-Reste mit denen anderer Gebiete; III, die Stellung der Zeuglodonten im System der Säugethiere; IV, Ueber den Hautpanzer der Zeuglodonten.

Palæontolog. Abhandl. (2) i (v), pp. 1-36, with pls i-vii (xxx-xxxvii).

—— 1895 A

Die Plesiosaurier der süddeutschen Liasformation.

Abhandl. k. Akad. Wissensch. Berlin, 1895, phys.-math. Cl., Abhandl., ii, pp. 1-83, pls. i-v, and 4 figs. in the text.

—— 1895 B

Ueber die Ichthyopterygier der Triasformation.

Sitz.-ber. k.-p. Akad. Wissensch. Berlin, 1895, pp. 1045-1050.

—— 1897 A

Ueber Brustbein, Schulter-und Beckengürtel der *Archæopteryx*.

Sitz-ber. k.-p. Akad. Wissensch. zu Berlin, 1897, pp. 813-834, with 3 figs. in the text.

Dana, E. S.
See **Grinnell** and **Dana**.

Dana, James D. 1875 A
On Dr. Koch's evidence with regard to the contemporaneity of man and the mastodon in Missouri.
Amer. Jour. Sci. (3), ix, pp. 335–346.

—— 1875 B
Supplement to the article on Dr. Koch's evidence with regard to the contemporaneity of man and the mastodon.
Amer. Jour. Sci. (3), ix, p. 398.

—— 1875 C
Reindeers in southern New England.
Amer. Jour. Sci. (3), x, pp. 353–357.

—— 1876 A
The *Vertebrata* of the Cretaceous formations of the West, by E. D. Cope.
Amer. Jour. Sci. (3), xi, pp. 65–66.
Notice and criticism of Professor Cope's work.

—— 1879 A
Review of J. D. Whitney's "Auriferous Gravels of the Sierra Nevada and California."
Amer. Jour. Sci. (3), xviii, 233–234.

—— 1888 A
Notice of Dr. J. S. Newberry's "Descriptions of new fossil fishes," published in Trans. N. Y. Academy of Sciences, vol. vi.
Amer. Jour. Sci. (3), xxxv, p. 498.

—— 1896 A
Manual of Geology; treating of the principles of the science with special reference to American geological history, etc.
Fourth edition, pp. 1–1087, with over 1,575 figs. in the text and 2 double-page maps. The first edition of this work was published in 1863; the second, 1876; the third, 1880.

Dareste, Camille. 1849 A
Observations sur l'ostéologie du poisson appelé Triodon macroptère.
Ann. Sci. Naturelles (3), xii, pp. 68–83, with pl. i.

—— 1872 A
Études sur les types ostéologiques des poissons osseux.
Comptes rend. Acad. Paris, lxxv, pp. 942–946; 1018–1021; 1086–1089; 1172–1175; 1253–1256.

Davidoff, M. 1880 A
Ueber das Skelett der hinteren Gliedmasse der *Ganoidei holostei* und der physostomen Knochenfische.
Morpholog. Jahrbuch, vi, pp. 125–128.

Davidoff, M.—Continued. 1880 B
Beiträge zur vergleichenden Anatomie der hinteren Gliedmasse der Fische.
Morpholog. Jahrbuch, vi, pp. 433–468, with pls. xxi–xxiii.
Discusses the structure of the ventral fins of the Ganoids and Physostomi.

—— 1883 A
Beiträge zur vergleichenden Anatomie der hinteren Gliedmasse der Fische. III Theil, *Ceratodus*.
Morpholog. Jahrbuch, ix, pp. 117–162, with pls. viii and ix.

Davies, A. M.
See **Howes** and **Davies**.

Davies, William. 1872 A
On the rostral prolongations of *Squaloraia polyspondyla*, Ag.
Geol. Magazine (1), ix, pp. 145–150, with pl. iv.

—— 1878 A
On the nomenclature of *Saurocephalus lanciformis* of the British Cretaceous deposits, with description and figures of a new species (*S. woodwardii*).
Geol. Magazine, (2), v, pp. 254–262, with pl. viii.

—— 1886 A
A note on Professor Cope's "*Edestus* and *Pelecopterus*," etc.
Geol. Magazine (3), iii, pp. 141-142.
A reply to a note by Professor Cope which appears on p. 141 of the same volume.

Davis, Chas. H. S. 1887 A
The *Catopterus gracilis*.
Trans. Sci. Assoc. Meriden, Conn., ii, pp. 21-22, with 1 fig. in the text.

Davis, James W. 1880 A
On the Teleostean affinities of the genus *Pleuracanthus*.
Ann. and Mag. Nat. Hist. (5), v, pp. 349–357.

—— 1880 B
On the genus *Pleuracanthus*, Agass., including the genera *Orthacanthus*, Agass. and Goldfuss; *Diplodus*, Agass., and *Xenacanthus*, Beyr.
Quart. Jour. Geol. Soc., xxxvi, pp. 321–336, with pl. xii and 10 text figs.

—— 1881 A
On the genera *Ctenoptychius*, Agassiz; *Ctenopetalus*, Agassiz; and *Harpacodus*, Agassiz.
Ann. and Mag. Nat. Hist. (5), viii, pp. 424-427.

Davis, James W.—Continued. 1882 A

On the zoological position of the genus *Petalorhynchus* Ag., a fossil fish from the Mountain limestone.

Report Brit. Assoc. Adv. Sci., 51st meeting, York, 1881, p. 646.

—— 1882 B

Notes on the occurrence of fossil-fish remains in the Carboniferous limestone series of Yorkshire.

Proc. Yorkshire Geol. and Polytech. Soc. (2), viii, pp. 39–63.

—— 1883 A

On the fossil fishes of the Carboniferous limestone series of Great Britain.

Trans. Roy. Dublin Soc. (2), i, pp. 327–548, with pls. xlii–lxv.

—— 1885 A

Note on *Chlamydoselachus*.

Proc. Yorkshire Geol. and Polytech. Soc. (2), ix, pp. 98–113, with pl. xi.

Diplodus, *Didymodus*, *Pleuracanthus*, *Cladodus*.

—— 1886 A

Notes on a collection of fossil-fish remains from the Mountain limestone of Derbyshire.

Geol. Magazine (3), iii, pp. 148–157.

Discusses relationship of *Xystrodus* to *Tomodus*.

—— 1887 A

Note on a fossil species of *Chlamydoselachus*.

Proc. Zool. Soc. Lond., 1887, pp. 542–544.

—— 1887 B

On *Chondrosteus acipenseroides*, Agassiz.

Quart. Jour. Geol. Soc., xliii, pp. 605–616, with pl. xxiii.

—— 1887 C

The fossil fishes of the chalk of Mount Lebanon, in Syria.

Trans. Roy. Dublin Soc. (2), iii, pp. 457–636, with pls. xiv–xxxviii.

—— 1888 A

On fossil-fish remains from the Tertiary and Cretaceo-Tertiary formations of New Zealand.

Trans. Roy. Dublin Soc. (2), iv, pp. 1–48, with pls. i–vii.

—— 1890 A

On the fossil fish of the Cretaceous formations of Scandinavia.

Trans. Roy. Dublin Soc. (2), iv, pp. 363–434, with pls. xxxviii–xlvi.

Davis, James W.—Continued. 1890 B

On the dentition of *Pleuroplax* (*Pleurodus*), A. S. Woodward.

Ann. and Mag. Nat. Hist. (6), v, pp. 291–294, with pl. xiii.

—— 1892 A

On the fossil-fish remains of the Coal-measures of the British Islands. Part I. *Pleuracanthidæ*.

Trans. Roy. Dublin Soc. (2), iv, pp. 703–748, with pls. lxv–lxxiii.

Pleuracanthus, *Orthacanthus*, *Xenacanthus*, *Compsacanthus*, *Diplodus*, and *Didymodus* are regarded as synonymous.

—— 1894 A

On the fossil-fish remains of the Coal-measures of the British Islands. Part II. *Acanthodidæ*.

Trans. Roy. Dublin Soc. (2), v, pp. 249–258, with pls. xxvii–xxix.

Davison, Charles. 1894 A

On deposits from snowdrift, with especial reference to the origin of the loess and the preservation of mammoth remains.

Quart. Jour. Geol. Soc., l, pp. 472–487.

Dawkins, W. Boyd. 1870 A

Fossil mammals in North America.

Nature, ii, pp. 119–120; 232–233.

A review of Dr. Leidy's "The extinct mammalian fauna of Dakota and Nebraska."

—— 1871 A

Geology of Oxford.

Nature, v, pp. 145–149, with 6 woodcuts.

A review of Prof. John Phillips's "Geology of Oxford and the Valley of the Thames."

—— 1872 A

The British Pleistocene *Mammalia*. Part V. British Pleistocene *Ovidæ*, *Ovibos moschatus*.

Palæontographical Society, xxv, pp. 1–30, pl. i–v.

—— 1879 A

On the range of the mammoth in space and time.

Quart. Jour. Geol. Soc., xxxv, pp. 138–147.

—— 1880 A

The classification of the Tertiary period by means of the *Mammalia*.

Quart. Jour. Geol. Soc., xxxi, pp. 379–405.

—— 1883 A

On the alleged existence of *Ovibos moschatus* in the Forest-bed, and on its range in space and time.

Quart. Journ. Geol. Soc., xxxix, pp. 575–581, with 1 woodcut.

Dawkins, W. Boyd—Continued. 1889 A

[Address as president of Section C of the Brit. Assoc. Adv. Sci., 1888, on the progress of geological inquiry.]

Report. Brit. Assoc. Adv. Sci., 58th meeting, Bath, 1888, pp. 644–650.

Dawkins, W. B., and **Sanford**, W. A. 1872 A

The British Pleistocene *Mammalia*. Part iv. British Pleistocene *Felidæ*.

Palæontographical Society, xxv, pp. 177–194; pls. xxiv–xxv.

Dawson, George M. 1894 A

Notes on the occurrence of mammoth remains in the Yukon district of Canada and Alaska.

Quart. Jour. Geol. Soc., l, pp. 1–9.

For notice of this paper and for remarks by Haworth see Nature, xlix, p. 93.

Dawson, J. William. 1855 A

Notice of the discovery of a reptilian skull in the Coal-measures of Pictou.

Quart. Jour. Geol. Soc., xi, pp. 8–9.

The reptile referred to is *Baphetes planiceps*.

—— 1860 A

On a terrestrial mollusk, a chilognathous myriapod, and some new species of reptiles from the Coal-measures of Nova Scotia.

Quart. Jour. Geol. Soc., xvi, pp. 268–277, with 29 figs. in the text.

—— 1862 A

Note on the discovery of additional remains of land animals in the Coal-measures of the South Joggins, Nova Scotia.

Quart. Jour. Geol. Soc., xviii, pp. 5–7.

—— 1863 A

Air breathers of the Coal period.

Amer. Jour. Sci. (2), xxxvi, pp. 430–432.

Abstract of pamphlet with same title, with illustrations; Bailliere, New York and London, 1863; Montreal, Dawson Brothers.

See also Canadian Naturalist, viii, 1863.

—— 1863 B

Notice of a new species of *Dendrerpeton*, and of the dermal coverings of certain Carboniferous reptiles.

Quart. Jour. Geol. Soc., xix, pp. 469–473.

—— 1863 C

A review of Dr. Dawson's book, "Air breathers of the Coal period," by S. J. Mackie.

The Geologist, vi, pp. 434–440.

Dawson, J. William—Continued. 1863 D

The air breathers of the Coal period of Nova Scotia.

Canadian Naturalist and Geologist, viii, pp. 1–12; 81–92; 159–160; 161–175; 268–295; with pls. i–vi.

—— 1863 E

Note on the footprints of a reptile from the Coal formation of Cape Breton.

Canadian Naturalist and Geologist, viii, pp. 430–431, with one fig. in the text.

Name assigned to the tracks, *Sauropus sydnensis*.

—— 1868 A

Acadian geology. The geological structure, organic remains, and mineral resources of Nova Scotia, New Brunswick, and Prince Edward Island.

London, 1868; pp. i–xxvii; 1–694, with 232 figs. in the text.

—— 1870 A

Note on some new animal remains from the Carboniferous and Devonian of Canada.

Quart. Jour. Geol. Soc., xxvi, pp. 166–167.

Also in Canadian Naturalist (2), v, pp. 98–99.

Note on, in Geol. Magazine, vii (1870), p. 87.

Describes briefly *Baphetes minor*.

—— 1872 A

Note on footprints from the Carboniferous of Nova Scotia, in the collection of the Geological Survey of Canada.

Geol. Magazine (1), ix, pp. 251–253, with 1 woodcut.

Describes *Sauropus unguifer*.

—— 1876 A

On a recent discovery of Carboniferous batrachians in Nova Scotia.

Amer. Jour. Sci. (3), xii, pp. 440–447.

—— 1877 A

Lower Carboniferous fishes of New Brunswick.

Canadian Naturalist (2), viii, pp. 337–340, with figs. in the text.

Describes the new species *Palæoniscus* (*Rhadinichthys*) *modulus*, and *P. jacksonii*.

—— 1877 B

Note on a fossil seal from the Leda clay of the Ottawa Valley.

Canadian Naturalist (2), viii, pp. 340–341.

The seal is identified as *Phoca grœnlandica*.

—— 1878 A

Acadian Geology. The geological structure, organic remains, and miner-

Dawson, J. William—Continued. 1878 A

al resources of Nova Scotia, New Brunswick, and Prince Edward Island.

Third edition, pp. i-xxvii; 1-694; supplement, pp. 1-103, with 248 figs.

—— 1882 A

On the results of recent explorations of erect trees containing animal remains in the Coal formation of Nova Scotia.

Philos. Trans. Royal Soc., Lond., clxxiii, pt. ii, pp. 621-659; pls. xxxix-xlvii.

—— 1882 B

On the results of recent explorations of erect trees containing reptilian remains in the Coal formation of Nova Scotia.

Canadian Naturalist (2), x, pp. 252-254.

This is a brief abstract of the preceding paper and is reprinted from Nature.

—— 1883 A

On portions of the skeleton of a whale from gravel on the line of the Canadian Pacific railway, near Smiths Falls, Ontario.

Amer. Jour. Sci. (3), xxv, pp. 200-202.

Canadian Naturalist (2), x, pp. 385-387.

—— 1890 A

Note on a fossil fish and marine worm found in the Pleistocene nodules of Greens Creek, on the Ottawa.

The Canadian Record of Science, iv, pp. 86-88.

Records the finding of *Cottus uncinatus* (*Artediellus*); also *Mallotus villosus*, *Cyclopterus lumpus*, and *Gasterosteus aculeatus*.

—— 1891 A

Note on *Hylonomus lyelli*, with photographic reproduction of skeleton.

Geol. Magazine (3), viii, pp. 258-259, with pl. viii.

—— 1891 B

On new specimens of *Dendrerpeton acadianum*, with remarks on other Carboniferous amphibians.

Geol. Magazine (3), viii, pp. 145-156, with 4 figs.

—— 1892 A

On the mode of occurrence of remains of land animals in erect trees at the South Joggins, Nova Scotia.

Trans. Royal Soc., Canada, for 1891, ix, sec. iv, pp. 127-128.

—— 1894 A

Some salient points in the science of the earth.

Pp. 499; illus. 46; New York: Harper & Brothers, publishers, 1894.

Chapter x; The oldest air-breathers.

Dawson, J. William—Continued. 1894 B

Preliminary note on recent discoveries of batrachian and other air-breathers in the Coal formation of Nova Scotia.

The Canadian Record of Science, vi, pp. 1-7, with 1 fig. in the text.

—— 1895 A

Synopsis of the air-breathing animals of the Palæozoic in Canada up to 1894.

Trans. Roy. Soc. of Canada for 1894, xii, sec. iv, pp. 71-78.

—— 1895 B

Note on a specimen of *Beluga catodon*, from the Leda clay, Montreal.

The Canadian Record of Science, vi, pp. 351-354.

—— See also **Lyell and Dawson.**

Day, E. C. H. 1864 A

On *Acrodus anningiæ*; with remarks upon the affinities of the genera *Acrodus* and *Hybodus*.

Geol. Magazine (1), i, pp. 57-65, with pls. iii and iv.

"D. L. H." 1838 A

Fossil Fishes.

Amer. Jour. Sci., xxxiv, pp. 198-200.

Dean, Bashford. 1891 A

Pineal foramen of placoderm and catfish.

Nineteenth report Commissioners of Fisheries of the State of New York, pp. 307-363, with pls. i-xiv.

The plates and the explanations thereof are included in the pagination.

—— 1893 A

Report of proceedings of New York Acad. of Sciences, Dec. 12, 1892.

Amer. Naturalist, xxvii, p. 183.

Refers to finding of *Protoceras celer*.

—— 1893 B

On *Trachosteus* and *Mylostoma*; notes on their structural characters.

Trans. N. Y. Acad. Sci., xii, pp. 70-71.

—— 1893 C

Note on the mode of origin of the paired fins.

Trans. N. Y. Acad. Sci., xii, pp. 121-125.

—— 1893 D

On the fin-structures of *Diplurus*.

Trans. N. Y. Acad. Sci., xiii, p. 22.

A very brief abstract.

—— 1894 A

Contributions to the morphology of *Cladoselache* (*Cladodus*).

Jour. Morphology, ix, pp. 87-114, pl. vii.

Dean, Bashford—Continued. 1894 B

A new Cladodont from the Ohio Waverly, *Cladoselache newberryi*, n. sp.

Trans. N. Y. Acad. Sci., xiii, pp. 115–119, with pl. i.

Describes *C. newberryi*.

—— 1895 A

Fishes, living and fossils; an outline of their forms and probable relationships.

Pp. i–xiv; 1–300, with frontispiece and 344 figs. in the text; Macmillan & Co., New York and London.

Review of by A. S. Woodward, Geol. Magazine, 1896, p. 135; and in Nat. Sci., viii, 267.

—— 1896 A

On the vertebral column, fins, and ventral armoring of *Dinichthys*.

Trans. N. Y. Acad. Sci., vol. xv, pp. 157–163, pls. vii, viii.

—— 1896 B

The fin-fold origin of the paired limbs, in the light of the ptychopterygia of Palæozoic sharks.

Anatom. Anzeiger, xi, pp. 673–679, with 8 figs.

—— 1896 C

Sharks as ancestral fishes.

Nat. Science, viii, pp. 245–253, with 5 figs. in the text.

Describes and figures *Cladoselache*.

—— 1897 A

Note on the ventral armoring of *Dinichthys*.

Trans. N. Y. Acad. Sci., xvi, pp. 57–61, with pls. ii, iii.

—— 1897 B

On a new species of *Edestus*, *E. lecontei*, from Nevada.

Trans. N. Y. Acad. Sci., xvi, pp. 61–69, with pls. iv, v.

Discusses also its relationships to the other species.

—— 1899 A

Devonian fishes for the American Museum.

Science (2), x, p. 978.

Refers to a purchase of a collection of Placoderms from the Devonian of Ohio.

Deane, James. 1844 A

On the fossil footmarks of Turners Falls, Mass.

Amer. Jour. Sci., xlvi, pp. 73–77, with 2 pls.

Abstract of, in Quart. Jour. Geol. Soc. Lond., i, p. 141.

—— 1844 B

On the discovery of fossil footmarks.

Amer. Jour. Sci., xlvii, pp. 381–390.

A protest against Prof. E. Hitchcock's claims regarding the fossil footmarks of the Connecticut Valley. See Hitchcock, E., 1844 B.

Deane, James—Continued. 1844 C

Answer to the "Rejoinder" of Professor Hitchcock.

Amer. Jour. Sci., xlvii, pp. 399–401.

Reply to Hitchcock, E., 1844 B.

—— 1845 A

Description of fossil footprints in the New Red sandstone of the Connecticut Valley.

Amer. Jour. Sci., xlviii, pp. 158–167, with 1 pl.

—— 1845 B

Illustrations of fossil footmarks.

Boston Jour. Nat. Hist., v, pp. 277–284, with 3 figs. in the text.

No species named.

—— 1845 C

Notice of a new species of batrachian footmarks.

Amer. Jour. Sci., xlix, pp. 79–81, with figs. in the text.

No systematic name given the tracks.

—— 1845 D

Fossil footmarks and raindrops.

Amer. Jour. Sci., xlix, pp. 213–214, with 1 page of figs.

No systematic names are applied to the footmarks.

—— 1847 A

Notice of new fossil footprints.

Amer. Jour. Sci. (2), iii, pp. 74–79, with 4 figs. in the text.

—— 1847 B

Fossil footprints.

Amer. Jour. Sci. (2), iv, pp. 448–449.

—— 1848 A

Fossil footprints of a new species of quadruped.

Amer. Jour. Sci. (2), v, pp. 40–41, with 1 fig. in the text.

In this paper no systematic name is given to the footprints.

—— 1850 A

Fossil footprints of Connecticut River.

Jour. Acad. Nat. Sci. Phila. (2), ii, pp. 71–74, pls. viii, ix.

—— 1856 A

On the sandstone fossils of Connecticut River.

Jour. Acad. Nat. Sci. Phila. (2), iii, pp. 173–178.

—— 1861 A

Ichnographs from the sandstone of Connecticut River. A memoir upon the fossil footprints and other impressions of the Connecticut River sandstone.

4to. Boston, 1861, pp, 1–61, with pls. i–xlvi.

This work was compiled mostly from Dr. Deane's incomplete papers by T. T. Bouvé. Accompanying it is an introduction (pp. 2–4), a biographical notice (pp. 5–12), and a list of

Deane, James—Continued.

Dr. Deane's published papers (pp. 13–14). The book consists mostly of explanations of the plates, and the species have been determined by Mr. Bouvé from Hitchcock's works.

Deecke, W. 1895 A

Notiz über ein Nothosauriden-Fragment.

Zeitschr. deutsch. geol. Gesellsch., xlvii, pp. 303–306, with 1 fig. in the text.

Deichmüller, J. V.

See **Geinitz and Deichmüller.**

De Kay, James E. 1824 A

Account of the discovery of a skeleton of the *Mastodon giganteum.*

Annals Lyc. Nat. Hist. N. Y., i, pp. 143–147.

A report made by Messrs. De Kay, Van Rensselaer, and Cooper. Records finding of skeleton in Monmouth County, N. J.

—— 1828 A

Notes on a fossil skull in the cabinet of the Lyceum, of the genus *Bos*, from the banks of the Mississippi, with observations on the American species of the genus.

Annals Lyc. Nat. Hist. N. Y., ii, pp. 280–291.

See also Edinburgh New Philos. Jour., 1828, v, pp. 326–327.

—— 1830 A

On the remains of extinct reptiles of the genera *Mosasaurus* and *Geosaurus* found in the Secondary formation of New Jersey, and on the occurrence of the substance recently named coprolite by Dr. Buckland, in the same locality.

Annals Lyc. Nat. Hist. N. Y., iii, pp. 134–141, pl. iii.

—— 1833 A

Observations on a fossil jaw of a species of gavial from west Jersey.

Annals Lyc. Nat. Hist. N. Y., iii, pp. 156–165, pl. iii, figs. 7–11.

—— 1842 A

Zoology of New York, or the New York fauna. Part III. Reptiles and Amphibia.

Pp. i–vii; 1–98, with pls. i–xxiii.

—— 1842 B

Fossil fishes.

Zoology of New York. Part IV, Fishes, pp. 385–387.

Gives a list of fossil fishes found in the United States and known to De Kay. Localities and references to literature given.

—— 1842 C

Mammalia.

Zoology of New York. Part I. *Mammalia*, pp. i–xv; 1–142, with pls. i–xxxiii.

Describes and refers to a number of fossil mammals. Of these a few are figured.

Delbos, Joseph. 1858 A

Recherches sur les ossements des Carnassiers des cavernes de Sentheim (Haut-Rhin) précédées d'observations sur l'ostéologie de l'ours brun des Pyrénées.

Annals des Sciences Naturelles, Zool. (4), ix, pp. 155–223.

—— 1860 A

Recherches sur les ossements des Carnassiers des cavernes de Sentheim (Haut-Rhin): Études sur les ours fossiles.

Annales des Sciences Naturelles, Zool. (4), xiii, pp. 47–108.

—— 1860 B

Recherches sur les ossements des Carnassiers des cavernes de Sentheim (Haut-Rhin): Études sur les ours fossiles.

Annales des Sciences Naturelles, Zool., (4), xiv, pp. 5–112.

Delfortrie, E. 1874 A

Un *Zeuglodon* dans les faluns du sud-ouest de la France.

Jour. de Zoologie, iii, pp. 25–30, with 2 figs. in the text.

Dennis, J. B. P. 1861 A

On the mode of flight of the pterodactyles of the Coproldi bed near Cambridge.

Report Brit. Assoc. Adv. Sci., 30th meeting, Oxford, 1860, p. 76.

Depéret, Charles. 1887 A

Recherches sur la succession des faunes de vertébrés miocènes de les vallée du Rhone. Pt. I (pp. 45–118), Stratigraphie paléontologique. Pt. ii (pp. 119–307), Description des vertébrés miocènes du bassin du Rhone.

Archives Mus. d'Hist. Nat. de Lyon, iv, pp. 45–313, with pls. ix–xxv.

—— 1892 A

La faune de mammifères miocènes de la Grive-Saint-Alban (Isère).

Archives Mus. d'Hist. Nat. de Lyon, pp. 1–95, pls. i–iv.

Deslongchamps-Eudes, J. A. 1838 A

Mémoire sur le *Poekilopleuron bucklandi*, grand saurien fossile, intermédiaire entre les crocodiles et les lézards.

Mém. Soc. Linn. Normandie, vi, pp. 37–146, with pls. i–viii.

—— 1864 A

Mémoires sur les téléosauriens de l'époque jurassique du Department du

Deslongchamps-Eudes, J. A.—Cont'd.
Calvados. Première mémoire contenant l'exposé des caractères géneraux des téléosauriens comparés à ceux des crocodiliens et la description particulière des espèces du lias supérieur.
Mém. Soc. Linn. Normandie, Caen, xiii, No. 3, pp. 1-138, with 9 pls.

Deslongchamps-Eudes, E. 1870 A
Note sur les reptiles fossiles appartenant à la famille des téléosauriens, dont le débris ont été recueillis dans les assises jurassiques de Normandie.
Bull. Soc. Géol. de France, xxvii, pp. 299-351, pls. ii-viii.

Desor, E. 1849 A
Remarks on finding of mastodon at Galena, Mo.
Proc. Boston Soc. Nat. Hist., iii, p. 207.

—— 1852 A
Post-pliocene of the Southern States and its relation to the Laurentian of the North and the deposits of the valley of the Mississippi.
Amer. Jour. Sci. (2), xiv, pp. 49-59.

Destinez, P. 1898 A
Sur deux *Diplodus* et un *Chomatodus* de l'Ampélite à unifère de Chokier, et deux *Cladodus* de Visé.
Ann. Soc. Géol. Belgique, xxiv, pp. 219-223.

Dickeson, M. W. 1845 A
On the geology of the Natchez bluffs.
Proc. 6th meeting Assoc. Amer. Geologists and Naturalists, 1845, pp. 77-79.
In this is described "a curious nondescript quadruped."

—— 1846 A
Remarks on *Megalonyx jeffersoni*.
Proc. Acad. Nat. Sci. Phila., iii, p. 106.

Didelot, Léon. 1875 A
Note sur un *Pycnodus* nouveau du Néocomien moyen (*P. heterodon*).
Bull. Soc. Géol. France (3), iii, pp. 237-256, pl. vi.

Diffenberger, F. R. 1873 A
Elephas americana in Mexico.
Amer. Jour. Sci. (3), vi, p. 62.

Dixon, Frederick. 1850 A
The geology and fossils of the Tertiary and Cretaceous formations of Sussex.
Pp. i-xvi; 1-422, with pls. i-xl.

—— 1878 A
The geology of Sussex, or the geology and fossils of the Tertiary and Cretaceous formations of Sussex; new edition, revised and augmented, by T. Rupert Jones, Brighton, 1878.
Pp. i-xxiv; 1-469, with pls. i-xxvii.

Dobson, G. E. 1885 A
An attempt to exhibit diagrammatically the several stages of evolution of the *Mammalia.*
Report Brit. Assoc. Adv. Sci., 54th meeting, Montreal, 1884, pp. 768-769, with 1 pl.

—— 1878 A
Catalogue of the *Chiroptera* in the collection of the British Museum.
London, 1878. 8 vo; pp. i-xlii; 1-567, with pls. i-xxix.

—— 1883 A
A monograph of the *Insectivora*, systematic and anatomical. Part I, including the families *Erinaceidæ*, *Centetidæ*, and *Solenodontidæ*. Part II, *Potamogalidæ*, *Chrysochloridæ*, and *Talpidæ* [in part]. Part iii, including pls. xxiii-xxviii.
Pp. 1-172, with pls. i-xxviii. 4to. London. Part i was issued in 1882; pt. ii, in 1883; pt. iii, in 1890. The text was not completed.

Döderlein, Ludwig. 1878 A
Ueber das Skelet des *Tapirus pinchacus.*
Archiv Naturgesch. xliv, i, pp. 37-90.

—— 1889 A
Das Skelet von *Pleuracanthus.*
Zoolog. Anzeiger, xii, pp. 123-127, with 1 text fig.

See also **Steinmann** and **Döderlein.**

Dohrn, Anton. 1886 A
Entstehung und Differenzirung des Zungenbein-und Kiefer-Apparates der Selachier.
Mittheil. Zoolog. Station Neapel, vi, pp. 1-48; 80-92, with pls. i-viii.

Dollo, Louis. 1882 A
Note sur l'ostéologie des *Mosasauridæ.*
Bull. de Musée Roy. d'Hist. nat. de Belgique, i, pp. 55-74, with pls. iv-vi.

—— 1882 B
Première note sur les Dinosauriens de Bernissart.
Bull. de Musée Roy. d'Hist. nat. de Belgique, i, pp. 161-178, with pl. ix.

—— 1882 C
Deuxième note sur les Dinosauriens de Bernissart.
Bull. de Musée Roy. d'Hist. nat. de Belgique, i, pp. 205-211, with pl. xii.
The paper treats especially of the sternum of *Iguanadon* and related genera.

Dollo, Louis—Continued. 1883 A

Note sur la présence chez les oiseaux du "troisième trochanter" des Dinosauriens et sur la function de celui-ci.

Bull. de Musée Roy. d'Hist. nat. de Belgique, ii, pp. 13-19, with pl. i.

—— 1883 B

Troisième note sur les dinosauriens de Bernissart.

Bull. de Musée Roy. d'Hist. nat. de Belgique, ii, pp. 85-126, with pls. iii-v.

Treats of *Iguanodon* and its relationships to other *Dinosauria* and to *Aves*. Plate v is a restoration of *Iguanodon bernissartensis*.

—— 1883 C

Note sur les restes de dinosauriens rencontrés dans le Crétacé supérieur de la Belgique.

Bull. de Musée Roy. d'Hist. nat. de Belgique, ii, pp. 205-221, with 20 figs. in the text.

—— 1883 D

Quatrième note sur les dinosauriens de Bernissart.

Bull. de Musée Roy. d'Hist. nat. de Belgique, ii, pp. 223-252, with pls. ix, x.

This paper is devoted to the anatomy of *Iguanodon bernissartensis*.

—— 1883 E

Première note sur les crocodiliens de Bernissart.

Bull. de Musée Roy. d'Hist. nat. de Belgique, ii, pp. 309-340, with pl. xii.

Treats of relationships of the genera of crocodiles.

—— 1883 F

Note sur la présence du *Gastornis edwardsii*, Lemoine, dans l'assise inférieure de l'étage landenien, à Mesvin, Près Mons.

Bull. de Musée Roy. d'Hist. nat. de Belgique, ii, pp. 297-305, with pl. ix and 1 text fig.

—— 1884 A

Première note sur les chéloniens de Bernissart.

Bull. de Musée Roy. d'Hist. nat. de Belgique, iii, pp. 63-84, with pls. i, ii.

Contains a discussion of the classification of the *Testudinata*.

—— 1884 B

Cinquième note sur les dinosauriens de Bernissart.

Bull. de Musée Roy. d'Hist. nat. de Belgique, iii, pp. 129-151, with pls. vi, vii.

Treats especially of the structure and relationship of *Iguanodon*.

Dollo, Louis—Continued. 1884 C

Première note sur le Simœdosaurien d'Erquelinnes.

Bull. de Musée Roy. d'Hist. nat. de Belgique, iii, pp. 151-186, with pls. viii, ix.

Discusses the structure of *Simœdosaurus* and its relation to *Champsosaurus* and *Sphenodon*.

—— 1885 A

Sur l'identité des genres *Champsosaurus* et *Simœdosaurus*.

Bull. Soc. géol. de France (3), xiv, pp. 95-96.

—— 1885 B

Notes d'ostéologie erpétologique. I. Sur une nouvelle dent de *Craspedon*, dinosaurien du Crétacé supérieur de la Belgique [pp. 309-318, 6 figs. in text]. II. Sur la présence d'un canal basioccipital médian et de deux canaux hypobasilaires chez un genre mosasauriens [pp. 319-331, 8 figs.]. III. Sur la présence d'une interclavicle chez ungenre de mosasauriens et sur la division de ce sous-ordre en familles [pp. 332-335, 2 figs.]. IV. Sur les épiphyses du calcaneum des lacertiliens [pp. 336-338, 4 figs.].

Annales Soc. Sci. de Bruxelles, ix, pp. 309-338, with 20 figs. in text.

—— 1886 A

Première note sur les chéloniens du Bruxellien (Éocène moyen) de la Belgique.

Bull. Musée Roy. d'Hist. nat. Belgique, iv, pp. 75-100, with pls. i, ii.

Contains a synopsis of the classification of *Testudinata* and observations on their osteology.

—— 1885 C

Première note sur le Hainosaure, mosasaurien nouveau de la craie brune phosphatée de Mesvin-Ciply, Près Mons.

Bull. de Musée Roy. d'Hist. nat. de Belgique, iv, pp. 25-35.

Contains notes on various American genera of *Mosasauridæ*.

—— 1887 A

Psephophorus.

Annales Soc. Scientifique de Bruxelles, xi, pp. 139-176.

—— 1888 A

On the humerus of *Euclastes*.

Geol. Magazine (3), v, pp. 261-267, with 3 figs.

Dollo, Louis—Continued. 1888 B

Iguanodontidæ et Camptonotidæ.

Comptes rend. Acad. Paris, cvi, pp. 775–777.

Notice of this paper in Geol. Mag., 1888, v, p. 520.

—— 1888 C

Première note sur les chéloniens oligocènes et néogènes de la Belgique.

Bull. de Musée Roy. d'Hist. nat. de Belgique, v, pp. 59–98, with pl. iv and a text fig. of a young *Dermochelys coriacea.*

This important paper contains a discussion of the higher groups of *Testudinata*, and especially a consideration of the value of the group *Athecæ.*

—— 1888 D

Sur le crâne des mosasauriens.

Bull. Sci. de la France et de la Belgique (3), i (xix), pp. 1–11, with pl. i and 9 figs. in the text.

—— 1888 E

Sur la signification du "trochanter pendant" des dinosauriens.

Bull. Sci. de la France et de la Belgique (3), i (xix), pp. 215–224.

—— 1890 A

Première note sur les mosasauriens de Maestricht.

Mém. Soc. Belge de Géologie, de Palæont., et d'Hydrologie (Bruxelles), iv, pp. 151–169, with pl. viii.

Contains abundant citations of the literature of the *Mosasauridæ.*

—— 1891 A

Nouvelle note sur le Champsosaure, rhynchocephalien adapté à la vie fluviatile.

Mém. Soc. Belge de Géologie, de Paléont., et d'Hydrologie (Bruxelles), v, pp. 147–199, with pls. vi–viii.

—— 1892 A

Sur l'origine de la nageoire caudale des *Ichthyosaurus.*

Bull. Soc. Belge Géol., Paléont., Hydrol., vi, Pr. verb., pp. 167–174, with 8 text figs.

—— 1892 B

Première note sur les Téléostéens du Crétacé supérieur de la Belgique.

Bull. Soc. Belge Géol., Paléont., Hydrol., vi, pp. 180-189, with 4 text figs.

—— 1892 C

Sur un nouveau type de dinosaurien.

Bull. Soc. Belge Géol., Paléont., Hydrol., vi, Pr. verb., pp. 10–12.

The principal groups of dinosaurs are characterized. The new type alluded to appears to be *Triceratops* Marsh.

Dollo, Louis—Continued. 1893 A

Suppression du genre *Leiodon.*

Bull. Soc. Belge Géol., Paléont., Hydrol., vii. Pr. verb., p. 79.

Regards *Leiodon* as a synonym of *Mosasaurus.*

—— 1893 B

Champsosaurus et *Pareiasaurus.*

Bull. Soc. Belge Géol., Paléont., Hydrol., vii, p. 79.

—— 1893 C

Nouvelle note sur l'ostéologie des mosasauriens.

Bull. Soc. Belge Géol., Paléont., Hydrol., vi, pp. 219–259, with pls. iii, iv.

—— 1896 A

Sur la phylogénie des *Dipneustes.*

Bull. Soc. Belge Géol., Paléont., Hydrol., ix, pp. 79–128, with pls. v–ix.

Concluded with a list of 123 papers and memoirs bearing on the subject. An abstract appears in Amer. Naturalist, xxx, p. 479.

Domeier, Wilhelm. 1803 A

Nachricht von einem in Nord America gefundenen vollständigen Gerippe eines Vierfüsslers, bisher häufig Mammoth oder Mammut genannt.

Neue Schriften Gesellsch. naturforsch. Freunde zu Berlin, iv, pp. 79–110.

Douglass, Earl. 1900 A

The Neocene lake beds of western Montana and descriptions of some new vertebrates from the Loup Fork. A thesis for the degree of M. S. in the University of Montana, June, 1899. Published by the University.

Pp. 3–27, with pls. i–iv.

Copies of this paper were first distributed about July 1, 1900.

—— 1900 B

New species of *Merycochœrus* in Montana, Part i.

Amer. Jour. Sci. (4), x, pp. 428–438, with 3 figs. in the text.

Describes *M. laticeps.* Part ii appeared in same journal January, 1901.

Donald, J. T. 1881 A

Notes on elephant remains from Washington Territory.

The Canadian Naturalist (2), ix, pp. 53–56.

Dugès, Alfredo. 1887 A

Platygonus alemanii, nobis, fósil cuaternario.

La Naturaleza (2), i, pp. 16–18, pls. i, ii.

Duméril, Aug. 1865 A

Histoire naturelle des poissons ou ichthyologie générale. Tome premier,

Duméril, Aug.—Continued.

Élasmobranches, Plagiostomes et Holocéphales ou Chiméres.

Pp. 1-720, with atlas of pls., Paris, 1865.

Dupont, Edward. 1867 A

Human remains in Belgium.

Amer. Jour. Sci. (2), xliii, pp. 121-123; 260-264.

Contains mention of *Elephas primigenius*.

Duralde, Martin. 1804 A

Abstract of a communication from Mr. Martin Duralde relative to fossil bones, etc., of the country of Apelousas, west of the Mississippi, to Mr. William Dunbar, of the Natchez, and by him transmitted to the society.

Trans. Amer. Philos. Soc., vi, pp. 55-58.

No species definitely mentioned except bone of man, and of "elephants."

Duvernoy, G. L. 1851 A

Caractères ostéologiques des genres nouveaux ou des espèces nouvelles de cétacés vivants ou fossiles.

Annales Sci. Nat. (3), xv, pp. 5-71; 381, with pls. i, ii.

—— 1855 A

Nouvelles études sur les rhinocéros fossiles.

Arch. Mus. d'Hist. nat., Paris, viii, pp. 1-144, with pls. i-viii.

Earle, Charles. 1891 A

On a new species of *Palæosyops*—*Palæosyops megarhinus*.

Amer. Naturalist, xxv, pp. 45-47, with 1 fig. in text.

—— 1891 B

Palæosyops and allied genera.

Proc. Acad. Nat. Sci. Phila., 1891, pp. 106-117, with 8 figs. in the text.

—— 1892 A

Revision of the species of *Coryphodon*.

Bull. Amer. Mus. Nat. Hist., iv, pp. 149-166.

—— 1892 B

The variability of specific characters as exhibited by the extinct genus *Coryphodon*.

Science, xx, pp. 7-9, with 2 figs. in the text.

—— 1892 C

A memoir upon the genus *Palæosyops* Leidy, and its allies.

Jour. Acad. Nat. Sci. Phila., ix, pp. 267-388, pls. x-xiv.

Reviewed by R. Lydekker, Natural Science, ii, pp. 148-149.

Earle, Charles—Continued. 1893 A

Some points in the comparative anatomy of the tapir.

Science, xxi, p. 118.

Discusses also the names of the tapir.

—— 1893 B

On the systematic position of the genus *Protogonodon*.

Amer. Naturalist, xxvii, pp. 377-379.

—— 1893 C

The evolution of the American tapir.

The Geol. Magazine (3), x, pp. 391-396.

—— 1893 D

The structure and affinities of the Puerco ungulates.

Science, xxii, pp. 49-51.

—— 1895 A

On a supposed case of parallelism in the genus *Palæosyops*.

Amer. Naturalist, xxix, pp. 622-626, pl. xxvii.

—— 1896 A

Notes on the fossil *Mammalia* of Europe. I. Comparison of the American and European forms of *Hyracotherium*.

Amer. Naturalist, xxx, pp. 131-135.

—— 1896 B

Tapirs, past and present.

Science (2), iv, pp. 934-935.

—— 1898 A

Relationship of the *Chriacidæ* to the *Primates*.

Amer. Naturalist, xxxii, pp. 261-262.

See also **Osborn** and **Earle**; **Wortman** and **Earle**.

Eastman, Charles R. 1895 A

Beiträge zur Kenntniss der Gattung *Oxyrhina*, mit besonderer Berücksichtigung von *Oxyrhina mantelli* Agassiz.

Palæontographica, xli, pp. 149-191, with pls. xvi-xviii.

—— 1896 A

Observations on the dorsal shields in the Dinichthyids.

Amer. Geologist, xviii, pp. 222-223.

Abstract of paper read before the Amer. Assoc. Adv. Sci., 1896.

—— 1896 B

Preliminary note on the relations of certain body plates in the Dinichthyids.

Amer. Jour. Sci. (4), ii, pp. 46-50.

—— 1896 C

Review of Bashford Dean's "On the vertebral column, fins, and central armoring of *Dinichthys*."

Amer. Geologist, xviii, pp. 316-317.

Eastman, Charles R.—Continued. 1896 D

Remarks on *Petalodus alleghaniensis*, Leidy.

Jour. Geology, iv, pp. 174–176.

—— 1897 A

Tamiobatis vetustus; a new form of fossil skate.

Amer. Jour. Sci. (4), iii, pp. 85–90, with pl. i and 1 fig. in the text.

—— 1897 B

On *Ctenacanthus* spines from the Keokuk limestone of Iowa.

Amer. Jour. Sci. (4), iii, pp. 10–13, with 2 figs. in the text.

Describes *C. xiphias* St. J. and W., and *C. acutus* sp. nov.

—— 1897 C

On the characters of *Macropetalichthys*.

Amer. Naturalist, xxxi, pp. 493–499, with pl. xii, and 1 fig. in the text.

—— 1897 D

On the relations of certain plates in the Dinichthyids.

Bull. Mus. Comp. Zool., Harvard, xxxi, pp. 19–43, with pls. i–v.

—— 1898 A

On the occurrence of fossil fishes in the Devonian of Iowa.

Iowa Geol. Surv., vii, pp. 108–116, with pl. iv and 1 fig. in the text.

The new genus *Synthetodus* is established and the new species *Ptyctodus molaris* described.

A notice of this paper, by C. R. Keyes, is found in Amer. Geologist, xxii, pp. 237-239.

—— 1898 B

Dentition of Devonian *Ptyctodontidæ*.

Amer. Naturalist, xxxii, pp. 473–488; 545–560, with 50 text figs.

—— 1898 C

Some new points in Dinichthyid osteology.

Proc. Amer. Assoc. Adv. Sci., xlvii, Boston, pp. 371–372.

See also Science (2), viii, pp. 400–401.

—— 1898 D

Some new points in Dinichthyid osteology.

Amer. Naturalist, xxxii, pp. 747–768, with 6 text figs.

For abstract, see Proc. Amer. Assoc. Adv. Sci., xlvii, Boston, pp. 371–372.

—— 1899 A

Some new American fossil fishes.

Science (2), ix, pp. 642–643.

—— 1899 B

[Notes on fossil fishes found in the Devonian at Milwaukee, Wis.]

Jour. of Geology, vii, pp. 278, 283.

These notes are contained in a paper by Teller and Monroe.

Eastman, Charles R.—Continued. 1899 C

Description of new species of *Diplodus* teeth from the Devonian of northeastern Illinois.

Jour. Geol., vii, pp. 489–493, with pl. vii.

Describes as new *Diplodus priscus* and *D. striatus;* also figures *Phœbodus politus* Newb.

—— 1899 D

Report on the department of vertebrate palæontology.

Annual Report of the assistant in charge of the Mus. Comp. Zool. Harvard College to the president and fellows of Harvard College for 1898–99, pp. 15, 16.

Records the fact that the type of *Titanichthys agassizi* is in Harvard College, and that there is also there a nearly complete skeleton of *Dinichthys pustulosus*.

—— 1899 E

Jurassic fishes from Black Hills of South Dakota.

Bull. Geol. Soc. America, x, pp. 397 408, with pls. xlv–xlviii and 2 text figs.

—— 1899 F

Upper Devonian fish fauna of Delaware County, N. Y.

17th Annual Report of the State Geologist [of New York] for the year 1897, pp. 317–327, with 6 text figs.

—— 1900 A

Fossil Lepidosteids from the Green River shales of Wyoming.

Bull. Mus. Comp. Zool. Harvard Coll., xxxvi, pp. 67–75, with pls. i–ii.

—— 1900 B

Dentition of some Devonian fishes.

Jour. Geology, viii, pp. 32–41, with 7 figs. in the text.

—— 1900 C

Devonische Fischreste aus der Eifel.

Amer. Geologist, xxv, pp. 391–392.

A notice of Huene's paper in Neues Jahrbuch Min. 1900, i, Abh., p. 64.

—— 1900 D

Einige neue Notizen über devonische Fischreste aus der Eifel.

Centralbl. Min., Geolog. und Palæont., 1900, No. 6, pp. 177–178.

—— 1900 E

New fossil bird and fish from the Middle Eocene of Wyoming.

Geol. Magazine (4), vii, pp. 54–58, with pl. iv.

Describes new genus and species of bird, *Gallinuloides wyomingensis*, and fish, *Lepidosteus atrox* Cope.

Edwards, Alphonse Milne. 1863 A

Mémoire sur la distribution géologique des oiseaux fossiles et description de quelques espèces nouvelles.

Annales des Sciences Naturelles, Zool. (4), xx, pp. 133-176, pl. iv.

—— 1864 A

Recherches anatomiques, zoologiques, et paléontologiques sur la famille des chevrotains.

Annales des Sciences Naturelles, Zool. (5), ii, pp. 49-167, pls. ii-xii.

—— 1865 A

Rapport sur les notes de MM. Nicolas et Chrétien relatives a des ossemens fossiles provenant de la Vallée de Zacualco.

Arch. Commission Sci. du Mexique, i, pp. 401-407, with 1 pl.

—— 1868 A

Recherches anatomiques et paléontologiques pour servir a l'histoire des oiseaux fossiles de la France.

Vol. i, pp. 1-475, with pls. i-xcvi.

—— 1871 A

Recherches anatomiques et paléontologiques pour servir a l'histoire des oiseaux fossiles de la France.

Vol. ii, pp. 1-632, with pls. xcvii-cc.

Edwards, Arthur M. 1895 A

Ornithichnites and jaw bone from the Newark sandstone of New Jersey.

Amer. Jour. Sci. (3), l, p. 346.

Edwards, Timothy. 1793 A

A description of a horn or bone lately found in the river Chemung, or Tyoga, a western branch of the Susquehanna, about twelve miles from Tyoga Point.

Mem. Amer. Acad., ii, p. 164.

Describes what was apparently the tusk of the mammoth.

Egerton, P. G. 1837 A

On certain peculiarities in the cervical vertebræ of the *Ichthyosaurus*, hitherto unnoticed.

Trans. Geol. Soc. London (2), v, pp. 187-193, with pl. xiv.

For a preliminary statement see Proc. Geol. Soc. Lond., ii, 1837, p. 192.

—— 1845 A

Description of the mouth of a *Hybodus* found by Mr. Boscawen Ibbetson on the Isle of Wight.

Quart. Jour. Geol. Soc., i, pp. 197-199, with pl. iv.

Egerton, P. G.—Continued. 1847 A

On the nomenclature of the fossil Chimæroid fishes.

Quart. Jour. Geol. Soc. Lond., iii, pp. 350-353, with pl. xiii and 1 fig. in the text.

—— 1847 B

Fossil fish [of coal-field of eastern Virginia].

Quart. Jour. Geol. Soc. Lond., iii, pp. 275-280.

—— 1848 A

Palichthyologic notes. Supplemental to the works of Professor Agassiz.

Quart. Jour. Geol. Soc. Lond., iv, pp. 302-314, with pl. x and 2 figs. in the text.

This paper is devoted to the consideration of the structure of *Pterichthys* and the description of new species.

—— 1848 B

Observations on Mr. McCoy's paper on "Some fossil fish of the Carboniferous period."

Ann. and Mag. Nat. Hist. (2), ii, pp. 189-190.

—— 1849 A

Palichthyologic notes. No. 2. On the affinities of the genus *Platysomus*.

Quart. Jour. Geol. Soc., v, pp. 329-332.

—— 1849 B

Palichthyologic notes. No. 3. On the *Ganoidei heterocerci*.

Quart. Jour. Geol. Soc. Lond., vi, pp. 1-10, with pl. ii.

—— 1852 A

Lepidotus pectinatus.

Mem. Geol. Surv. United Kingdom, decade 6, no. iii, pp. 1-2, with pl. iii.

—— 1852 B

Ptycholepis minor Egerton.

Mem. Geol. Surv. United Kingdom, decade 6, no. vii, pp. 1-3, pl. vii.

—— 1853 A

Notes on the fossil fish from Albert mine.

Quart. Jour. Geol. Soc. Lond., ix, p. 115.

A brief identification of the fishes collected at Albert mine, New Brunswick, by Charles Lyell.

—— 1853 B

Palichthyologic notes. No. 4. On the affinities of the genera *Tetragonolepis* and *Dapedius*.

Quart. Jour. Geol. Soc. Lond., ix, pp. 274-279, with pl. xi.

—— 1857 A

Palichthyologic notes. No. 9. On some fish remains from the neighborhood of Ludlow.

Quart. Jour. Geol. Soc., London, xiii, pp. 282-289, with pls. ix, x.

Egerton, P. G.—Continued. 1857 B

On the unity of the genera *Pleuracanthus*, *Diplodus*, and *Xenacanthus*, and on the specific distinction of the Permian fossil *Xenacanthus decheni* (Beyrich.)

Ann. and Mag. Nat. Hist. (2), xx, pp. 423-424.

—— 1859 A

Palichthyologic notes. No. 12. Remarks on the nomenclature of the Devonian fishes.

Quart. Jour. Geol. Soc., xvi, pp. 119-136.

—— 1859 B

On *Chondrosteus*, an extinct genus of the *Sturionidæ*.

Philosoph. Trans. Roy. Soc. Lond., cxlviii, pp. 871-875; pls. 67-70.

—— 1861 A

Remarks on the ichthyolites of Farnell road.

Report Brit. Assoc. Adv. Sci., 30th meeting, Oxford, 1860, pp. 77-78.

Description of *Acanthodes mitchelli*.

—— 1861 B

British fossils.

Mem. Geol. Sur. United Kingdom, decade 10, pp. 51-75; pls. iv-x.

Descriptions and figs. of *Tristichopterus*, *Acanthodes*, *Climatius*, and *Diplacanthus*.

—— 1862 A

On a new species of *Pterichthys* (*P. macrocephalus*, Egerton), from the yellow sandstone of Farlow Co., Salop.

Quart. Jour. Geol. Soc., xviii, pp. 103-106, with pl. iii, figs. 7-9.

—— 1866 A

On a new species of *Acanthodes* from the Coal series of Longton.

Quart. Jour. Geol. Soc., xxii, pp. 468-470, with pl. xxiii.

—— 1869 A

On two new species of *Gyrodus*.

Quart. Jour. Geol. Soc., xxv, pp. 379-386, with 5 text figs.

—— 1871 A

On a new Chimæroid fish from the Lias of Lyme Regis (*Ischyodus orthorhinus* ♂)

Quart. Jour. Geol. Soc., xxvii, pp. 275-279, with pl. xiii.

Eichwald, Eduard. 1840 A

Die Thier- und Pflanzenreste des alten rothen Sandsteins und Bergkalks im Novgorodschen Gouvernement.

Bull. Sci. Acad. Imp. Sci. St. Pétersbourg, vii, pp. 78-91.

Eichwald, Eduard—Continued. 1846 A

Nachtrag zu der Beschreibung der Fische des devonischen Systems aus der Gegend von Pawlowsk.

Bull. Soc. Imp. Nat. Moscou, xix, pt. ii, pp. 277-318.

—— 1857 A

Beitrag zur geographischen Verbreitung der fossilen Thiere Russlands.

Bull. Soc. Imp. Nat. Moscou, xxx, pt. ii, pp. 305-354.

Pp. 338-354 are devoted to the fossil vertebrates. Of most interest are some remarks on *Asterolepis* and *Bothriolepis*.

—— 1860 A

Lethæa Rossica ou Paléontologie de la Russie.

Vol. i, pp. 1493-1633, with pls. lv-lix.

Only the pages of this volume are quoted here which contain matter bearing on the vertebrates.

—— 1866 A

Die *Rhytina borealis* und der *Homocrinus dipentas* in der Lethæa Rossica.

Bull. Soc. Imp. Nat. Moscou, xxxix, pp. 138-162, with pl. viii.

The plate illustrates the structure of *Homocrinus*.

—— 1868 A

Lethæa Rossica ou Paléontologie de la Russie.

Vol. ii, pp. 1195-1285, with pls. xxviii-xl, of vol. ii of atlas.

Only those pages of this volume are quoted which contain descriptions of vertebrates.

—— 1871 A

Analecten aus der Palæontologie und Zoologie Russlands.

Moscow, 1871, 4to, pp. i-iv; 1-23, with pls. i-iii.

Contains description and figures of *Palæoteuthis marginalis* Eichw., pp. 1-15, pl. i.

Eigenmann, C. H. 1890 A

Description of a fossil species of *Sebastodes*.

Zoe, i, p. 17, with 1 fig.

Describes preopercle of *Sebastodes* (?) *rosæ* from Tertiary beds at Port Halford, Cal.

Emerton, J. H. 1887 A

The restoration of the skeleton of *Dinoceras mirabile*.

Proc. Boston, Soc. Nat. Hist. xxiii, pp. 342-343.

Emery, Carl,

Die fossilen Reste von *Archegosaurus* und *Eryops* und ihre Bedeutung für die Morphologie des Gliedmassenskelets.

Anatom. Anzeiger, xiv, pp. 202-208, with 7 figs. in the text.

Emery, Carl—Continued. 1897 B

Ueber die Beziehungen des Crossopterygiums zu anderen Formen der Gliedmassen der Wirbeltiere.

Anatom. Anzeiger, xiii, pp. 137-149, with 6 figs. in the text.

—— 1897 C

Beiträge zur Entwicklungsgeschichte und Morphologie des Hand-und Fussskelets der Marsupialier.

Semon's Zoolog. Forschungsreisen in Australien, etc., ii, pp. 371-400, with pls. xxxiii-xxxvi, with 13 text figs.

On p. 400 is found a record of the literature examined.

Emmons, Ebenezer. 1845 A

On the supposed *Zeuglodon cetoides* of Professor Owen.

Amer. Quart. Jour. Agricult. and Sci., ii, pp. 59-63, with 1 page of figs.

—— 1845 B

The *Zeuglodon cetoides* (Owen).

Amer. Quart. Jour. Agricult. and Sci., ii, p. 366.

—— 1846 A

Description of some of the bones of the *Zeuglodon cetoides* of Professor Owen.

Amer. Quart. Jour. Agricult. and Sci., iii, pp. 223-231, with pls. i, ii.

—— 1851 A

Description of some of the bones of the *Zeuglodon cetoides* of Professor Owen.

Pp. 1-6. Year and place of publication unknown. Copy deposited in Smithsonian Institution November 18, 1851.

—— 1856 A

Geological report on the midland counties of North Carolina. Illustrated with engravings.

Pp. i-xx; 1-352; pls. 1-8. New York, Geo. P. Putnam & Co. Raleigh, Henry D. Turner, 1856.

Chap. xi, pp. 293-323, and p. 347 are devoted to the "animal remains of the Coal Measures of the Deep and Dan rivers," and to a "notice of the vertebral remains of the Bristol conglomerate."

—— 1857 A

American geology, containing a statement of the principles of the science, with full illustrations of the characteristic American fossils, with an atlas and a geological map of the United States.

Part vi, pp. i-x; 1-152, with pls. i-x, and 114 figs. in the text.

—— 1858 A

Fossils of the sandstones and slates of North Carolina.

Proc. Amer. Assoc. Adv. Sci., 11th meeting, Montreal, 1857, pp. 76-80.

Emmons, Ebenezer—Cont'd. 1858 B

Report of the North Carolina Geological Survey. Agriculture of the eastern counties, together with descriptions of the fossils of the marl beds.

Illustrated by engravings. Raleigh, 1858. Pp. i-xv; 1-314.

Chapters xv-xvii are devoted to descriptions of the fossil vertebrates, and there are furnished 83 woodcuts in the text.

—— 1860 A

Manual of geology. Second edition.

Pp. i-viii; 1-297, with 218 figs. New York, 1860.

Etheridge, Robert, and **Willett**, Henry. 1889 A

On the dentition of *Lepidotus maximus*, etc.

Quart. Jour. Geol. Soc., xlv, pp. 356-358, with pl. xiv.

Evermann, B. W. 1893 A

A skeleton of Steller's sea-cow.

Science, xxi, p. 59.

See also **Jordan** and **Evermann**.

Ewart, J. C. 1894 A

The development of the skeleton of the limbs of the horse, with observations on polydactyly.

Jour. Anat. Physiol., xxviii, pp. 236-256, with 3 pages of figs; 342-369, with pl. xii.

—— 1894 B

The second and fourth digits in the horse; their development and subsequent degeneration.

Proc. Roy. Soc. Edinburgh, xx, pp. 185-191.

The author claims to have found these elements in the fœtus of the horse.

Eyerman, John. 1886 A

Footprints on the Triassic sandstone (Jura-Trias) of New Jersey.

Amer. Jour. Sci. (3), xxxi, p. 72.

—— 1889 A

Notes on geology and mineralogy.

Proc. Acad. Nat. Sci. Phila., 1889, pp. 32-35.

Describes footprints from Jura-Trias of New Jersey.

—— 1890 A

Bibliography of North American vertebrate palæontology for the year 1889.

Amer. Geologist, v, pp. 250-253.

—— 1891 A

Bibliography of North American vertebrate palæontology for the year 1890.

Amer. Geologist, vii, pp. 231-238.

—— 1891 B

A catalogue of the palæontological publications of Joseph Leidy, M. D., LL. D.

Amer. Geologist, viii, pp. 333-342.

Eyerman, John—Continued. 1892 A

Bibliography of North American vertebrate palæontology for the year 1891.

Amer. Geologist, ix, pp. 249–256.

—— 1893 A

Bibliography of North American vertebrate palæontology for the year 1892.

Amer. Geologist, xi, pp. 388–398.

—— 1894 A

Preliminary notice of a new species of *Temnocyon*, and a new genus from the John Day Miocene of Oregon.

Amer. Geologist, xiv, pp. 320, 321.

Descriptions of *T. ferox* and new genus *Hypotemnodon*, type *Temnocyon coryphæus* Cope.

—— 1896 A

The genus *Temnocyon* and a new species thereof, and the new genus *Hypotemnodon*, from the John Day Miocene of Oregon.

Amer. Geologist, xvii, pp. 267–287.

Falconer, Hugh. 1857 A

Description of two species of the fossil mammalian genus *Plagiaulax* from Purbeck.

Quar. Jour. Geol. Soc. Lond., xiii, pp. 261–282, with 17 figs. in the text.

—— 1857 B

On the species of mastodon and elephant occurring in the fossil state in Great Britain. Part I. Mastodon.

Quar. Jour. Geol. Soc. Lond., xii, pp. 307–360, with pls. xi-xii.

Contains diagnoses of the genera *Mastodon* and *Elephas*, the former being divided into the subgenera *Trilophodon* and *Tetralophodon*, the latter genus into *Stegodon*, *Loxodon*, and *Euelephas*.

—— 1862 A

On the disputed affinity of the mammalian genus *Plagiaulax*.

Quar. Jour. Geol. Soc., xviii, pp. 348–369, with 20 figs. in the text.

—— 1865 A

On the species of mastodon and elephant occurring in the fossil state in Great Britain. Part II.

Quar. Jour. Geol. Soc., xxi, pp. 253–332.

—— 1868 A

Palæontological memoirs and notes.

Vol. i, Fauna antiqua sivalensis, pp. 1–590, with pls. i-xxxiv and 16 text figs.; vol. ii, Mastodon, Elephant, Rhinoceros, etc., pp. 1–675, with pls. i-xxxviii and text figs. 1-9. London, 1868.

Compiled by Charles Murchison, with a biographical sketch of Hugh Falconer.

Falconer, Hugh, and **Cautley,** Proby T. 1846 A

Fauna antiqua sivalensis, being the fossil zoölogy of the Sewalik Hills in the north of India. 1. *Pachydermata*. Elephant and mastodon.

Pp. 1–64, with pls. i-lvi and description of plates forming pp. 1–77.

Farr, Marcus S. 1896 A

Notes on the osteology of the White River horses.

Proc. Amer. Philos. Soc., xxxv, pp. 147–175, with 6 figs. in the text.

Abstract in Princeton Univ. Bull., ix, pp. 17–18, 1897; reviewed by Schlosser in Neues Jahrbuch Mineral., 1899, ii, pp. 316–319.

Farrington, Oliver C. 1899 A

A fossil egg from Dakota.

Pubs. Field Columb. Mus., Geology, i, pp. 193–200, with pls. xx-xxi.

Faujas-Saint-Fond, Barth. 1802 A

Sur deux espèces de bœufs on trouve les crânes fossiles en Allemagne, en France, en Angleterre, dans le nord de l'Amerique et dans d'autres contrées.

Ann. Mus. d'Hist. Nat. Paris, 1802, ii, pp. 188–200, with pls. xliii, xliv.

Contains description and plate of fossil bison (*B. latifrons*).

Featherstonhaugh, G. W. 1831 A

Rhinoceroides alleghaniensis.

Monthly Amer. Jour. Geology and Nat. Sci., i, pp. 10–12, with pl. i.

Felix, Johannes. 1890 A

Beiträge zur Kenntniss der Gattung *Protosphyræna* Leidy.

Zeitschr. deutsch. geol. Gesellsch., xlii, pp. 278–302, with pls. xii-xiv.

Felix, Johannes and **Lenk,** H. 1891 A

Uebersicht über die geologischen Verhältnisse des mexicanischen Staats Puebla.

Palæontographica, xxxvii, pp. 117–139, with pl. xxx.

Field, Roswell. 1860 A

Ornithichnites, or tracks resembling those of birds.

Amer. Jour. Sci. (2), xxix, pp. 361–363.

—— 1860 B

Ornithichnites.

Proc. Amer. Assoc. Adv. Sci., 13th meeting, Springfield, Mass., 1859, pp. 337–340.

The tracks regarded as belonging to *Reptilia*.

—— 1860 C

Communication on the footmarks of the Connecticut River sandstones.

Proc. Boston Soc. Nat. Hist., vii, p. 316.

Filhol, Henri. 1872 A

Récherches sur les mammifères fossiles des depots de phosphate de Chaux dans les departments du Lot, du Tarn et de Tarn-et-Garone.

Annales sci. géol, iii, art. 7, pp. 1–31, with pls. 13–19.

—— 1874 A

Nouvelles observations sur les mammifères des gisements de phosphates de Chaux (Lémuriens et Pachylémuriens).

Annales sci. géol., v, art. 4, pp. 1–36, with pls. vii and viii.

Devoted especially to descriptions of genera *Necrolemur* and *Palæolemur*. Pl. viii contains 4 figures of *Adapis*.

—— 1876 A

Recherches sur les phosphorites du Quercy. Étude des fossiles qu'on y rencontre et spécialement des mammifères.

Annales sci. géol., vii, art. 7, pp. 1–220, with pls. x–xxxvi.

—— 1877 A

Recherches sur les phosphorites du Quercy. Étude des fossiles qu'on y rencontre et spécialement des mammifères.

Annales sci. géol., viii, art. 1, pp. 1–340, with pls. i–xxviii.

—— 1881 A

Étude des mammifères fossiles de Saint-Gérand-le-Puy (Allier). Seconde partie (1).

Annales sci. géol., xi, pp. 1–86, with pls. i–xx.

—— 1882 A

Étude des mammifères fossiles de Ronzon (Haute-Loire).

Annales sci. géol., xii, art. 3, pp. 1–271, with pls. vi–xxxi.

—— 1882 B

Observations relatives aux caractères ostéologiques de certaines espèces d'*Eudyptes* et de *Spheniscus*.

Bull. Soc. Philomatique de Paris (7), vii, pp. 226–235.

—— 1883 A

Notes sur quelques mammifères fossiles de l'époque miocène.

Archives du Muséum d'Historic Naturelle de Lyon, iii, pp. 1–97, pls. i–v.

1. Observations relatives à divers mammifères fossiles provenant de Saint-Gérand-le-Puy (Allier), pp. 1–42.

2. Observations relatives au carnassiers signalé par Jourdan sous le nom de *Dinocyon thenardi*, pp. 43–58.

3. Observations relatives à divers carnassiers fossiles provenant de la Grive-Saint Alban (Isère), pp. 56–69.

4. Observations relatives aux chiens actuels et aux carnassiers fossiles s'en approchant le plus, pp. 70–97.

—— 1883 B

Observations relatives au mémoire de M. Cope intitulé: Relation des horizons renfermant des débris d'animaux vertébrés fossiles en Europe et en Amérique.

Annales sci. géol., xiv, art. 5, pp. 1–51.

—— 1884 A

De la restauration du squelette d'un *Dinoceras*.

Annales sci. géol., xvi, art. 4, pp. 1–10, with pl. ix.

Based especially on Dr. Osborn's study of *Loxolophodon*, in Osborn, H. F., 1881 A.

—— 1885 A

Observations sur le mémoire de M. Cope intitulé: Relations des horizons renfermant des débris d'animaux vertébrés fossiles en Europe et en Amérique.

Annales sci. géol., xvii, art. 5, pp. 1–18, with pl. vi.

—— 1888 A

Études sur les vertébrés fossiles d'Issel (Aude).

Mem. soc. géol. de France (3), v, pp. 1–188, with pls. 1–21.

Devoted principally to the genus *Lophiodon* and its species and to *Pachynolophus*.

—— 1888 B

Caractères de la face du *Machairodus bidentatus*.

Bull. Soc. Philomat. de Paris (7), xii, pp. 129–134.

—— 1891 A

Études sur les mammifères fossiles de Sansan.

Annales sci. géol., France, xxi, pp. 1–319, with pls. i–xlvi.

—— 1891 B

De la dentition supérieure de l'*Anthracotherium mimimum*.

Bull. Soc. Philomat., Paris (8), iii, pp. 89–91, with 2 figs. in the text.

—— 1894 A

Observations concernant quelques mammifères fossiles nouveaux du Quercy.

Annales Sci. Nat., Zool. (7), xvi, pp. 129–150, with 21 figs.

Describes remains regarded as belonging to *Dasypodidæ*, *Manidæ*, and *Orycteropodidæ*.

Fisher, G. J. 1859 A

Account of an antler of the reindeer found at Sing Sing, N. Y.

Proc. Acad. Nat. Sci., Phila., xi, p. 194.

Fleischmann, A. 1890 A

Die Stammesverwandtschaft der Nager (*Rodentia*) mit den Beutelthieren (*Marsupialia*).

Sitzungsber. k.-p. Akad. Wissensch., Berlin, 1890, pp. 299–305.

—— 1891 A

Die Grundform der Backzähne bei Säugethieren und die Homologie der einzelnen Höcker.

Math. naturwiss. Mittheil. k.-p. Akad. Wissensch., Berlin, 1891, pp. 405–417, with pl. v.

Flores, Eduardo. 1897 A

Sul sistema dentario del genere *Anthracotherium* Cuv.

Bull. soc. geol. Ital., xvi, pp. 92–96.

Flot, L. 1886 A

Description de *Halitherium fossile*, Gervais.

Bull. soc. géol. de France (3), xiv, pp. 483–518, pls. xxvi–xxviii.

—— 1886 B

Note sur le *Prohalicore dubaleni*.

Bull. soc. géol. de France (3), xv, pp. 134–138, pl. i.

Flower, W. H. 1864 A

Notes on the skeletons of whales in the principal museums of Holland and Belgium, with descriptions of two species apparently new to science.

Proc. Zool. Soc. Lond., 1864, pp. 384–426, with 17 figs. in the text.

—— 1867 A

Description of the skeleton of *Inia geoffrensis* and of the skull of *Pontoporia blainvillii*, with remarks on the systematic position of these animals in the order *Cetacea*.

Trans. Zool. Soc. Lond., vi, pp. 87–116, with pls. xxv–xxviii.

—— 1868 A

On the development and succession of the teeth in the armadillos (*Dasypodidæ*).

Proc. Zool. Soc. Lond., 1868, pp. 378–380.

—— 1868 B

On the osteology of the cachelot, or sperm whale (*Physeter macrocephalus*).

Trans. Zool. Soc. Lond., vi, pp. 309–372, with pls. lv–lxi and 13 figs. in the text.

Flower, W. H.—Continued. 1869 A

Remarks on the homologies and notation of the teeth of *Mammalia*.

Jour. Anat. and Physiol., iii, pp. 262–263, with 6 figs. in the text.

—— 1869 B

On the value of the characters of the base of the cranium in the classification of the order *Carnivora*, and on the systematic position of *Bassaris* and other disputed forms.

Proc. Zool. Soc. Lond., 1868, pp. 4–37, with 15 text figs.

—— 1871 A

On the ziphoid whales.

Nature, v, pp. 103–106.

—— 1871 B

On the composition of the carpus of the dog.

Jour. Anat. and Physiol., vi, pp. 62–64, with 1 text fig.

—— 1872 A

On the recent ziphoid whales, with a description of the skeleton of *Berardius arnouxi*.

Trans. Zool. Soc. Lond., viii, pp. 203–234, with pls. xxvii–xxix.

—— 1873 A

Hunterian lectures. *Artiodactyla*.

Nature, vii, pp. 428–430.

Abstract of three lectures.

—— 1874 A

On the structure and affinities of the musk deer (*Moschus moschiferus*).

Proc. Zool. Soc. Lond., 1874, pp. 159–190, with 14 figs. in the text.

—— 1876 A

On some cranial and dental characters of the existing species of rhinoceroses.

Proc. Zool. Soc. Lond., 1876, pp. 443–457, with 4 figs. in the text.

—— 1876 B

Hunterian lectures on the relations of extinct to existing *Mammalia*.

Nature, xiii, pp. 307–308; 327–328; 350–352; 387–388; 409–410; 449–450; 487–488; 513–514: vol. xiv, p. 11.

Abstract of a course of lectures at the Royal College of Surgeons.

—— 1876 C

The extinct animals of North America.

Proc. Roy. Institution, Great Britain, viii, pp. 103–125, with 3 figs. in the text.

A popular lecture on the fossil *Mammalia* of North America.

Flower, W. H.—Continued. 1881 A

Horse. Part I. Zoology and anatomy.

Encyclop. Brit., ed. 9, xii, pp. 172-181, with 6 figs. in the text.

To this article is subjoined a bibliography of the subject.

—— 1882 A

On the mutual affinities of the animals composing the order *Edentata*.

Proc. Zool. Soc. Lond., 1882, pp. 358-367.

—— 1882 B

Lemur.

Encyclop. Brit., ed. 9, xiv, pp. 440-445, with 6 text figs.

A portion of this article is devoted to extinct *Lemuroidea*.

—— 1883 A

On the arrangement of the orders and families of existing *Mammalia*.

Proc. Zool. Soc. Lond., 1883, pp. 178-186.

—— 1883 B

On the characters and divisions of the family *Delphinidæ*.

Proc. Zool. Soc. Lond., 1883, pp. 466-513, with 9 figs. in the text.

—— 1883 C

Mammoth.

Encyclop. Brit., ed. 9, xv, pp. 447-448, with 2 figs. in the text.

—— 1883 D

Mammalia.

Encyclop. Brit., ed. 9, xv, pp. 347-446, with 123 figs. in the text.

This article treats of the anatomy and classification of the *Mammalia*, together with general descriptions of the various orders and families. The portions on the *Insectivora*, *Chiroptera*, and *Rodentia* were furnished by Dr. G. E. Dobson.

—— 1885 A

An introduction to the osteology of the *Mammalia*. Third edition, revised with the assistance of Hans Gadow.

London: Macmillan & Co., 1885, pp. 383, figs. 134.

Flower, W. H. and **Lydekker**, R. 1891 A

An introduction to the study of mammals living and extinct.

London, pp. 763, figs. 357. 8vo. 1891.

Forbes, Henry O. 1893 A

Observations on the development of the rostrum of the cetacean genus *Mesoplodon*, with remarks on some of the species.

Proc. Zool. Soc. Lond. 1893, pp. 216-236, with pls. xii-xv and 1 page of text figs.

Forshey, C. G. 1846 A

[Communication regarding cranium of bear found near Natchez, Miss., and supposed to be that of the polar bear.]

Proc. Bost. Soc. Nat. Hist., ii, p. 163.

Foster, J. W. 1837 A

Miscellaneous observations made during a tour in May, 1835, to the falls of the Cuyahoga, near Lake Erie; extracted from the diary of a naturalist.

Amer. Jour. Sci., xxxi, pp. 1-84.

Description of a fossil "*Ovis mammillaris*," figs. 19, and of a fossil beaver (*Castoroides*), figs. 16-18.

—— 1838 A

Organic remains.

2d annual report Geol. Surv. Ohio, pp. 79-83, with text figs. A-D.

A portion of Foster's report to the State geologist.

—— 1839 A

Head of *Mastodon giganteum*.

Amer. Jour. Sci., xxxvi, pp. 189-191, with 1 fig.

—— 1849 A

Remarks on geological position of the mastodon.

Proc. Nat. Hist. Soc. Boston, iii, pp. 111-117.

Accompanied by remarks by Professor Rogers, Dr. Pickering, and Mr. Desor.

—— 1857 A

On the geological position of the deposits in which occur the remains of the fossil elephant of North America.

Proc. Amer. Assoc. Adv. Sci., 10th meeting, Albany, 1856, pp. 148-169.

—— 1872 A

A new species of elephant.

Nature, vi, p. 443.

Reports the proposal before Amer. Soc. Adv. Sci., by Foster, of a supposed new species of fossil elephant from Indiana, *E. mississippiensis*. No description given.

Foulke, William P. 1858 A

[Statement respecting fossil bones of *Hadrosaurus*.]

Proc. Acad. Nat. Sci. Phila., 1858, pp. 213-215.

Fraas, Eberhard. 1885 A

[Review of W. Dames: Ueber *Archæopteryx* in Palæontologische Abhandlungen.]

Neues Jahrbuch Min., Geol., und Palæontol., i, 1885, pp. 470-472. Referate.

See Dames, W., 1884 B.

—— 1888 A

Ueber die Finne von *Ichthyosaurus*.

Jahreshefte Ver. f. vaterl. Naturk. Würtemberg, xliv, pp. 280-303, with pl. vii.

Fraas, Eberhard—Continued. 1889 A

Die Labyrinthodonten der schwäbischen Trias.

Palæontographica, xxxvi, 1-158, with pls. i-xvii.

—— 1891 A

Die Ichthyosaurier der Süddeutschen Trias- und Jura- Ablagerungen.

Pp. 1-81, with pls. i-xiv.

Contains a history of this subject and a discussion of the anatomy of ichthyosaurs.

Pp. 80-81 are occupied by a list of papers and memoirs on the *Ichthyosauria*.

—— 1892 A

The paddles and fins of *Ichthyosaurus*.

Geol. Magazine (3), ix, pp. 516-517, with 2 figs. in the text.

—— 1892 B

Ichthyosaurus numismalis E. Fraas.

Jahreshefte Ver. f. vaterl. Naturk. Würtemberg, xlviii, pp. 22-31.

—— 1894 A

Die Hautbedeckung von *Ichthyosaurus*.

Jahreshefte Ver. f. vaterl. Naturk., Würtemberg, l., pp. 493-497, with pl. v.

—— 1896 A

Neue Selachier-Reste aus dem oberen Lias von Holzmaden in Württemberg. I. *Hybodus hauffianus* E. Fraas (= *Hybodus reticulatus* Quenstedt, non Agassiz). II. *Palæospinax smith-woodwardii* E. Fraas.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, lii, Abh., pp. 1-25, with pls. i, ii.

—— 1898 A

Ein neues Exemplar von *Ichthyosaurus* mit Haut-Bekleidung.

Földtani Közlöny, xxviii, pp. 169-173, with pl. ii.

—— 1899 A

Proganochelys quenstedtii Baur (*Psammochelys keuperina* Qu.). Ein neuer Fund der Keuperschildkröte aus dem Stubensandstein.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, lv, pp. 401-424, with pls. v-viii, and 5 figs. in the text.

Fraas, Oscar. 1861 A

Ueber *Semionotus* und einige Keuper-Conchylien.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, xvii, pp. 81-101.

—— 1867 A

Dyoplax arenaceus, ein neuer Stuttgarter Keuper-Saurier.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, xxiii, pp. 109-112, with pl. i.

Franque, Henricus. 1847 A

Nonnulla ad Amiam calvam accuratius cognoscendam.

Pp. 12, with 1 pl.

Inaugural dissertation.

Frenkel, F. 1873 A

Beitrage zur anatomischen Kenntniss des Kreuzbeines der Säugethiere.

Jenaische Zeitschr. f. med. Naturwiss., (1) vii pp. 391-437, with pls. xxi, xxii.

Fricke, Karl. 1875 A

Die fossile Fische aus der Oberen Juraschichten von Hannover.

Palæontographica, xxii, 347-398, pls. xviii-xxii.

Fritsch, Anton. 1876 A

Ueber die Fauna der Gaskohle des Pilsner und Rakonitzer Beckens.

Sitzungsber. k. böhmischen Gesellsch. der Wissensch. in Prag, Jahrgang 1875, pp. 70-79.

—— 1878 A

Die Reptilien und Fische der böhmischen Kreideformation.

Pp. i, ii, 1-46, with 10 pls. and 66 wood cuts. Prag., 1878.

—— 1883 A

Fauna der Gaskohle und der Kalksteine der Permformation Böhmens.

Pp. 1-182, with pls. i-xlviii.

Pp. 1-92 were published in 1879; pp. 93-126, 1880; pp. 127-158, 1881; pp. 159-182, 1883.

—— 1888 A

Ueber die Brustflosse von *Xenacanthus decheni*, Goldf.

Zoolog. Anzeiger, xi, pp. 113-114, with 1 fig. in the text.

—— 1889 A

Ueber *Xenacanthus*.

Zoolog. Anzeiger, xii, pp. 386-387.

—— 1889 B

Fauna der Gaskohle und der Kalksteine der Permformation Böhmens. Zweiter Band. *Stegocephali* (Schluss). *Dipnoi*, *Selachii* (Anfang).

Pp. 1-114, with 42 pls. and 79 text figs.

Pp. 1-32 are dated 1885; pp. 33-64, 1885; pp. 65-92, 1888; pp. 93-114, 1889.

—— 1890 A

Über Pterygopodien permischer Haifische der Gattungen *Pleuracanthus* und *Xenacanthus*.

Zoolog. Anzeiger, xiii, pp. 318-320, with 1 fig. in text.

—— 1890 B

Preliminary notes on the palæozoic Elasmobranchs, *Pleuracanthus* and *Xenacanthus*.

Geol. Magazine, (3), vii, p. 566.

Fritsch, Anton—Continued. 1891 A

Restorations of the Palæozoic Elasmobranch genera *Pleuracanthus* and *Xenacanthus*.

Report Brit. Assoc. Adv. Sci., 60th meeting, Leeds, 1890, p. 822.

—— 1891 B

Über die Xenacanthiden.

Zoolog. Anzeiger, xiv, pp. 21-22 (with restored figure of an old female of *X. decheni*).

—— 1895 A

Fauna der Gaskohle und der Kalksteine der Permformation Böhmens.

Vol. iii, pp. 1-132, pls. 91-132, and text figs. 189-310.

Pp. 1-48 are dated 1890; pp. 49-80, 1893; pp. 81-104, no date, 1894; pp. 105-132, 1895.

This volume is devoted to the genus *Pleuracanthus*, the *Acanthodidæ*, *Megalichthys*, *Palæoniscidæ*, etc.

Review of part ii by A. S. Woodward, in Natural Science, ii, pp. 435-438, with 3 figs.

—— 1895 B

Ueber neue Wirbelthiere aus der Permformation Böhmens, nebst einer Uebersicht der aus derselben bekannt gewordenen Arten.

Sitzungsber. k. böhm. Gesellsch. Wissensch., 1895, lii, pp. 1-17, with 1 text fig.

Fry, Edward. 1846 A

On the osteology of the active gibbon (*Hylobates agilis*).

Proc. Zool. Soc. Lond., 1846, pl. xiv, pp. 11-18.

Fürbringer, Max. 1885 A

Über das Schulter- und Ellenbogengelenk bei Vögeln und Reptilien.

Morpholog. Jahrbuch, xi, pp. 118-120.

—— 1885 B

Über die Nervenkanäle im Humerus der Amnioten.

Morpholog. Jahrbuch, xi, pp. 484-486.

—— 1888 A

Untersuchungen zur Morphologie und Systematik der Vögel, zugleich ein Beitrag zur Anatomie der Stütz- und Bewegungsorgane.

Pp. 1-xlix; 1-1718, with 30 pls. Folio, Amsterdam, 1888.

If under the various genera and higher groups citations to particular pages of Fürbringer's work are found, it must be understood only that on those pages some special treatment is given such groups. The same genera and higher groups may be found mentioned anywhere throughout this splendid volume.

—— 1889 A

Untersuchungen zur Morphologie und Systematik der Vögel, zugleich ein Beitrag zur Anatomie der Stütz- und Bewegungsorgane.

Biolog. Centralbl., ix, pp. 204-217, 385-396, 499-510.

—— 1890 A

Untersuchungen zur Morphologie und Systematik der Vögel, zugleich ein Beitrag zur Anatomie der Stütz- und Bewegungsorgane.

Biolog. Centralbl., x, pp. 48-62, 326-341, 373-377, 491-504, 754-767.

—— 1890 B

Ueber die systematische Stellung der *Hesperornithidæ*.

Monatsschrift deutsch. Verein z. Schutze d. Vogelwelt, xv, pp. 488-513.

—— 1892 A

Untersuchungen zur Morphologie und Systematik der Vögel, etc.

Biolog. Centralbl., xii, pp. 146-157; 722-729.

—— 1892 B

L. Stejneger's Vogelsystem.

Jour. Ornithologie (4), xx, pp. 137-148.

—— 1896 A

Untersuchungen zur Morphologie und Systematik der Vögel, zugleich ein Beitrag zur Anatomie der Stütz- und Bewegungsorgane. (Neunzehntes Stück).

Biolog. Centralbl., xvi, pp. 497-511.

—— 1900 A

Zur vergleichenden Anatomie des Brustschulterapparates und der Schultermuskeln; iv Teil.

Jenaische Zeitschr. f Naturwiss. Jena, xxxiv, pp. 215-718, with pls. xiii-xvii and 141 figs. in the text.

This work deals with the anatomy of the shoulder-girdle of reptiles. Pp. 597-682 were issued separately with the title "Beitrag zur Systematik und Genealogie der Reptilien," pp. 1-88; Inhaltsübersicht pp. 89-91.

Gadow, Hans. 1877 A

Anatomie des *Phœnicopterus roseus* Pall., und seine Stellung im System.

Jour. Ornithologie, xxv, pp. 382-396.

—— 1885 A

On the anatomical differences in the three species of *Rhea*.

Proc. Zool. Soc. Lond., 1885, pp. 308-322, with 11 woodcuts in the text.

—— 1888 A

Remarks on the numbers and on the phylogenetic development of the remiges of birds.

Proc. Zool. Soc. Lond., 1888, pp. 655-667.

Gadow, Hans—Continued. 1889 A

On the modifications of the first and second visceral arches, with especial reference to the homologies of the auditory ossicles.

Philosoph. Trans. Roy. Soc. Lond., clxxix, pp. 451-485, pls. lxxi-lxxiv.

—— 1891 A

Vögel.

Bronn's Klassen und Ordnungen des Thier-Reichs, vi, pp. 91-1008, with pls. xviii-lix.

Pp. 1-90 of this work, written by E. Selenka, and published in 1869, are devoted to the osteology of birds. Pages 934-995 treat of the development of the skeleton. On pp. 954-989 is an important list of works on the development of the skeleton.

—— 1892 A

On the classification of birds.

Proc. Zool. Soc. Lond., 1892, pp. 229-256.

—— 1896 A

On the evolution of the vertebral column of *Amphibia* and *Amniota*.

Philos. Trans. Roy. Soc. Lond. (B), clxxxvii, pp. 1-57, with 56 figs. in the text.

Appended is a list of 93 memoirs and papers on the subject.

—— 1896 B

[Articles in Newton's Dictionary of Birds, 1893-1896.]

—— 1897 A

Remarks on the supposed relationship of birds and dinosaurs.

Proc. Cambridge Philos. Soc., ix, pp. 204-208.

—— 1898 A

A classification of *Vertebrata*, recent and extinct.

London, Adam and Charles Black, 1898, 8vo, pp. i-x; 1-82.

—— 1899 A

Orthogenetic variation in the shells of *Chelonia*.

Proc. Cambridge Philosoph. Soc., x, pp. 35-37.

—— and **Abbott, E. C.** 1895 A

On the evolution of the vertebral column of fishes.

Philosoph. Trans. Royal Soc., Lond. clxxxvi, pp. 163-221, illustrated by numerous text-figs.

Garman, Samuel. 1884 A

A peculiar selachian.

Science, iii, pp. 116-117, with 1 woodcut.

Describes *Chlamydoselachus anguineus* Garman.

—— 1884 B

The oldest living type of vertebrate, *Chlamydoselachus*.

Science, iii, p. 345.

Rejoinder to Prof. E. D. Cope.

Garman, Samuel—Continued. 1884 C

The oldest living type of vertebrate.

Science, iv, p. 484.

Discusses relationships of *Chlamydoselachus*; also includes a classification of the *Selachii*.

—— 1884 D

An extraordinary shark.

Bull. Essex Institute, xvi, pp. 47-52, with 1 page of figs.

Description of new species and genus, *Chlamydoselachus anguineus* Garman, belonging to the new family *Chlamydoselachidæ*.

—— 1885 A

On the frilled shark.

Proc. Amer. Assoc. Adv. Sci., 33d meeting, Phila., 1884, pp. 537-538.

Refers to *Chlamydoselachus anguineus*.

—— 1885 B

Chlamydoselachus anguineus Garm. A living species of cladodont shark.

Bull. Mus. Comp. Zool., xii, pp. 1-35, with pls. i-xx.

—— 1892 A

The *Discoboli*, *Cyclopteridæ*, *Liparopsidæ*, and *Liparididæ*.

Mem. Mus. Comp. Zool., xiv, No. 2, pp. 1-96, pls. i-xiii.

Garrod, A. H. 1873 A

On the affinities of *Dinoceras* and its allies.

Nature, vii, p. 481.

Places *Dinoceras* among *Artiodactyla*.

—— 1873 B

On the order *Dinocerata* (Marsh).

Jour. Anat. Physiol., vii, pp. 267-270, with 1 fig.

A statement of Marsh's results; nothing new is put forth.

—— 1876 A

On some anatomical characters which bear upon the major divisions of the passerine birds. Part I.

Proc. Zool. Soc. Lond., 1876, pp. 506-519, with pls. xlviii-liii.

—— 1877 A

Note on the solid-hoofed pigs in the society's collection.

Proc. Zool. Soc. Lond., 1877, p. 33.

Gaudin, C.

See **Pictet, Gaudin** and **Harpe.**

Gaudry, A. 1872 A

Sur une dent d'*Elephas primigenius* trouvée par M. Pinard dans l'Alaska.

Comptes rend. Acad. Paris, lxxv, pp. 1281-1282.

—— 1873 A

Sur une dent d'*Elephas primigenius* trouvée par M. Pinard dans l'Alaska.

Bull. Soc. Géolog. de France (3), i, pp. 123-124.

Gaudry, A.—Continued. 1875 A

Sur la découverte de batraciens dans le terrain primaire.

Bull. Soc. Géolog. de France (3), iii, pp. 299-306, pls. vii, viii.

—— 1875 B

Sur quelques pièces de mammifères fossiles qui ont été trouvées dans les phosphorites du Quercy.

Jour. Zoologie, iv, pp. 518-527, with pl. xviii.

—— 1877 A

Letter to Count de Saporta on North American vertebrate palæontology.

Amer. Naturalist, xi, pp. 184-186.

—— 1878 A

Sur les reptiles des temps primaires.

Comptes rend. Acad. Sci. Paris, lxxxvii, pp. 956-958.

Describes structure of the vertebræ of *Actinodon* and the occurrence of pleurocentra therein.

—— 1878 B

Les enchaînements du monde animal dans les temps géologiques. Mammifères tertiaires.

Paris, 1878. 8°. Pp. 1-295, with 312 figs. in the text.

—— 1883 A

Les enchaînements du monde animal dans les temps géologiques. Fossiles primaires.

Paris, 1883. Pp. 1-319, with 285 figs. in the text.

Pp. 218-250 are devoted to the fishes; pp. 251-288 to the batrachians and the reptiles.

—— 1885 A

Sur les dinocératidés que M. Marsh a recueillis dans l'éocène du Wyoming.

Comptes rend. Acad. Paris, ci, pp. 718-720.

—— 1889 A

Restauration du squelette du *Dinoceras.*

Comptes rend. Acad. Paris, cviii, p. 1292.

—— 1890 A

Remarques sur le nom générique *d'Hipparion.*

Bull. Soc. Géolog. de France (3), xviii, pp. 189-191.

—— 1890 B

Apparences d'inégalité dans le développement des êtres de l'ancien et du nouveau continent.

Comptes rend. Acad. Paris, cx, pp. 482-483.

—— 1890 C

Les enchaînements du monde animal dans les temps géologiques. Fossiles secondaires.

8vo, pp. 1-323, with 403 figs. in the text; Paris, 1890.

Pp. 169-306 of this work are devoted to the *Vertebrata.*

Gaudry, A.—Continued. 1891 A

Similitudes dans la marche de l'évolution sur l'ancien et le nouveau continent.

Bull. Soc. Géolog. de France (3), xix, pp. 1024-1035.

—— 1891 B

Quelques remarques sur les mastodontes à propos de l'animal du Cherichira.

Mém. Soc. Géolog. de France, ii, Mém. No. 8, pp. 1-6, with pls. i, ii.

—— 1892 A

Les Pythonomorphes de France.

Mém. Soc. Géolog. de France. Paléontologie, iii, No. 10, pp. 1-13, with pls. xvii, xviii.

—— 1895 A

Sur les cornes des dinocératidés.

Actes Soc. Scient., Chili, v, pp. cxlii-cxliii.

—— 1897 A

La dentition des ancêtres des tapirs.

Bull. Soc. Géolog. de France (3), xxv, pp. 315-325, with pl. x.

See also Comptes rendus Acad. Sci., cxxv, pp. 755-756.

Gaupp, Ernst. 1891 A

Zur Kenntniss des Primordial-Craniums der Amphibien und Reptilien.

Verhandl. anatom. Gesellsch., 5th meeting, Munich, 1891, pp. 114-120.

—— 1894 A

Zur vergleichenden Anatomie der Schläfengegend am knöchernen Wirbelthiere.

Schwalbe's Morpholog. Arbeiten, iv, pp. 77-131, pls. vi, vii.

Cites the literature of the subject.

—— 1895 A

Mitteilungen zur Anatomie des Frosches.

Anatom. Anzeiger, xi, pp. 1-8, with 5 figs.

This paper treats of the carpus and tarsus of the frog.

—— 1895 B

Ueber die Jochbogen-Bildungen am Schädel der Wirbelthiere.

Jahresber. schles. Gesellsch. vaterl. Cultur, ii Abth., pp. 56-63.

—— 1898 A

Zur Entwicklungsgeschichte des Eidechsenschädels.

Berichte naturforsch. Gesellsch. zu Freiburg i. B., x, pp. 302-316.

—— 1900 A

Das Chondrocranium von *Lacerta agilis.* Ein Beitrag zum Verständnis des Amniotenschädels.

Merkel und Bonnets Anatom. Hefte, xv (Heft xlix), pp. 435-496, with pls. xlii-xlvii, and 23 figs. in the text.

Gazley, Sayres. 1830 A

Notice of osseous remains at Big Bone Lick, Kentucky.

Amer. Jour. Sci. (1), xviii, pp. 139–141.

The above communication is an anonymous one, but the author's name is given in Amer. Jour. Sci., xx, p. 372.

Gegenbaur, Carl. 1864 A

Untersuchungen zur vergleichenden Anatomie der Wirbelthiere. Erstes Heft. Carpus und Tarsus.

Pp. i–vi; 1–127, with 6 pls. Leipzig, 1864.

—— 1865 A

Vergleichend-anatomische Bemerkungen über das Fusskelet der Vögel.

Archiv f. Anat. Physiol. u. wissensch. Med., Jahrg. 1865, pp. 450–472, with 4 text figs.

—— 1865 B

Untersuchungen zur vergleichenden Anatomie der Wirbelthiere. Zweites Heft: 1. Schultergürtel der Wirbelthiere. 2. Brustflosse der Fische.

Pp. i–iv; 1–176, with 9 pls. Leipzig, 1865.

—— 1872 A

Untersuchungen zur vergleichenden Anatomie der Wirbelthiere. Drittes Heft. Das Kopfskelet der Selachier; ein Beitrag zur Erkenntniss der Genese des Kopfskeletes der Wirbelthiere.

Pp. i–x; 1–316, with 22 pls.

—— 1872 B

Ueber das Archipterygium.

Jenaische Zeitschr. f. Med. u. Naturwiss., (1), vii, pp. 131–141, with pl. x.

—— 1876 A

Zur Morphologie der Gliedmassen der Wirbelthiere.

Morpholog. Jahrbuch, ii, pp. 396–420, with 4 figs. in the text.

—— 1887 A

Die Metamerie des Kopfes und die Wirbeltheorie des Kopfskeletes.

Morpholog. Jahrbuch, xiii, pp. 1–114.

Appended is a list of 59 titles of papers bearing on the subject.

—— 1895 A

Clavicula und Cleithrum.

Morpholog. Jahrbuch, xxiii, pp. 1–20, with 5 figs. in text.

—— 1895 B

Das Flossenskelet der Crossopterygier und das Archipterygium der Fische.

Morpholog. Jahrbuch, xxii, pp. 119–160, with 5 figs. in text.

—— 1898 A

Vergleichende Anatomie der Wirbelthiere mit Berücksichtigung der Wirbellosen. Erster Band. Einleitung, Integument, Skeletsystem, Muskelsystem, Nervensystem und Sinnesorgane.

Leipzig, 1898, 8vo; pp. i–xiv; 1–978, with 619 figs., some colored.

Gegenbaur, Carl—Continued.

Geinitz, Hans Bruno. 1839 A

Characteristik der Schichten und Petrefacten des sächsischen Kreidegebirges.

Erstes Heft. Der Tunnel bei Obergau, etc., 1839, pp. i–v; 1–29, with pls. i–viii. Zweites Heft. A. Das Land zwischen dem Plauen'shen Grunde bei Dresden und Dohna. B. Fische. Crustaceen, Mollusken, 1840, pp. i–iv; 30–62, with pls. ix–xvi. Drittes Heft. Die sächsisch-böhmische Schweitz, die Oberlausitz und das Innere von Böhmen, 1842, pp. 63–116; i–xxvi, with pls. xvii–xxiv.

—— 1847 A

Koch's *Hydrarchos harlani*.

Neues Jahrbuch f. Mineralogie, 1847, pp. 47–49.

—— 1860 A

Zur Fauna des Rothliegenden und Zechsteins.

Zeitschr. deutsch geol. Gesellsch., xii, pp. 467–470.

Refers to the dorsal spine of *Xenacanthus decheni*.

—— 1861 A

Dyas, oder die Zechsteinformation und das Rothliegenden. Heft 1. Die animalische Ueberreste der Dyas.

Pp. vii–xviii; 1–342, with 23 pls.

—— 1868 A

Die fossilen Fischschuppen aus dem Plänerkalke in Strehlen.

Denkschr. Gesellsch. Natur-u. Heilkunde, Dresden, 1868, pp. 33–48, with pls. i–iv.

—— 1875 A

Das Elbthalgebirge in Sachsen. Zweiter Theil. Der mittlere und obere Quader. VI. Würmer, Krebse, Fische und Pflanzen.

Palæontographica, xx, pp. 199–245, with pls. xxxvii–xlvi.

—— 1883 A

Die sogenannten Koprolithenlager von Helmstedt, Büddenstedt und Schleweke bei Harzburg.

Abhandl. naturwiss. Gesellsch. Isis in Dresden, i, pp. 3–14, with pl. i, figs. 1–22.

—— 1884 A

Ueber ein Graptolithen-führenden Geschiebe mit *Cyathaspis* von Rostock.

Zeitschr. deutsch. geol. Gesellsch., xxxvi, pp. 854–857, with pl. xxx,

Geinitz, Hans Bruno—Cont'd. 1885 A

Ueber Milchzähne der Mammuth, (*Elephas primigenius*).

Festschrift naturw. Gesellsch. Isis in Dresden. Feier 50 jährg. Bestehens, pp. 66-74, with pl. iii.

The figures are those of the very young animal.

Geinitz, H. B., and **Deichmüller**, J. V. 1882 A

Die Saurier der unteren Dyas von Sachsen.

Palæontographica, xxix, pp. 1-46, with 9 pls.

Geissler, Gustav. 1895 A

Ueber neue Saurier-Funde aus dem Muschelkalk von Bayreuth.

Zeitschr. deutsch. geol. Gesellsch., xlvii, pp. 331-355, with pls. xiii, xiv.

Describes various portions of the skeleton of *Nothosaurus*.

Gemmellaro, Gaetano Géorgio. 1857 A

Ricerche sui pesci fossili della Sicilia.

Atti dell' Accademia naturali di Catania (2), xiii, pp. 279-328, with pls. i-vi.

George, ——. 1869 A

Études zoologiques sur les Hémiones et quelques autres espèces chevalines.

Annales Sci. Naturelles, Zool. (5), xii, pp. 5-58, pls. 1-4.

Gervais, Paul. 1839 A

[Remarks on *Megatherium*.]

Bull. Soc. Géolog. de France, x, p. 142.

—— 1850 A

Mémoire sur la famille des cétacés Ziphioides et plus particulièrement sur le *Ziphius longirostris* de la Méditerranée.

Ann. Sci. Naturelles (3), xiv, pp. 1-11.

—— 1853 A

Recherches sur l'ostéologie de plusieurs espèces d'amphisbènes, et remarques sur la classification de ces reptiles.

Ann. Sci. Naturelles (3), xx, pp. 293-314, with pl. xv.

—— 1855 A

Recherches sur les mammifères fossiles de l'Amérique méridionale.

Castelnau's Exped. Amer. du Sud., pp. 1-63, with pls. iv-xiii.

—— 1859 A

Zoologie et paléontologie français. Nouvelles recherches sur les animaux vertébrés dont on trouve les ossements enfouis dans le sol de la France et sur leur comparaison avec les espèces propres aux autres regions du globe. Deuxième édition, accompagnée d'un atlas de 84 planches et de figures intercalées dans le texte.

Paris, 1859, pp. i-viii; 1-544.

—— 1862 A

Sur les *Squalodon*.

Bull. Acad. Roy. de Belgique (2), xiii, pp. 462-469.

Letter addressed to Van Beneden.

—— 1871 A

Remarques sur l'anatomie des cétacés de la division des Balénidés tirées de l'examen des pièces relatives a ces animaux que sont conservées au Muséum.

Nouv. Arch. du Mus. d'Hist. Nat. Paris, vii, pp. 65-146, with pls. iii-ix.

—— 1872 A

Ostéologie du Sphargis luth (*Sphargis coriacea*).

Nouv. Arch. du Mus. d'Hist. Nat. Paris, viii, pp. 199-228, with pls. v-ix.

An abstract of this memoir appeared in Jour. Zoologie, ii, 1873, pp. 1-4.

—— 1873 A

Recherches sur les Édentés tardigrades.

Jour. Zoologie, ii, pp. 463-469.

—— 1874 A

Form typique des membres chez les Équidés.

Jour. Zoologie, iii, pp. 300-307.

—— 1874 B

Remarques sur les formes cérébrales propres aux Thalassothériens.

Jour. Zoologie, iii, pp. 570-583.

—— 1876 A

Remarques au sujet du genre *Phocodon* d'Agassiz.

Jour. Zoologie, v, pp. 62-70, with 2 figs. in the text.

—— 1876 B

Remarques au sujet du mémoire précédent [Marsh on *Brontotheriidæ*].

Jour. Zoologie, v, p. 255.

—— 1878 A

Sur la dentition des Smilodons.

Comptes rend. Acad. Paris, lxxxvii, pp. 582-583.

See also **Gervais** and **Ameghino**; **Van Beneden** and **Gervais**.

Gervais, H., and **Ameghino**, F. 1880 A

Les mammifères fossiles de l'Amérique du Sud.

Pp. i-xi; 1-225. Buenos Aires and Paris: 1880. Contains list of about 300 fossil mammals, with diagnoses of new genera and species. About 60 of these species are regarded as new. See Branco, W., Jahresbuch Mineral., i, 1883, p. 300.

Ghigi, Alessandro. 1900 A

Sui denti dei Tapiridi.

Verhandl. anat., Gesellsch., xiv (Pavia), pp. 17-29, with 9 figs. in the text.

These Verhandlungen are found in the Ergänzungsheft of Anatom. Anzeiger, xviii.

Gibbes, Robert W. 1845 A

Description of the teeth of a new fossil animal found in the Green-sand of South Carolina.

Proc. Acad. Nat. Sci. Phila., 1845, ii, pp. 254-256, pl. i.

A notice of this paper is found in Amer. Jour. Sci., 1845, xlix, p. 216. Describes *Dorudon serratus*.

—— 1846 A

On the fossil *Squalidæ* of the United States.

Proc. Acad. Nat. Sci. Phila., iii, pp. 41-43.

Contains a list of the species which this author had identified.

—— 1847 A

Description of new species of *Squalidæ* from the Tertiary beds of South Carolina.

Proc. Acad. Nat. Sci. Phila., iii, pp. 266-268.

—— 1847 B

On the fossil genus *Basilosaurus*, Harlan (*Zeuglodon* Owen), with a notice of specimens from the Eocene Green-sand of South Carolina.

Jour. Acad. Nat. Sci. Phila., (2), i, pp. 5-15, pls. i-v.

—— 1848 A

[Letter from, to Dr. Morton regarding the genus *Dorudon.*]

Proc. Acad. Nat. Sci. Phila., iv, p. 57.

—— 1848 B

Monograph of the fossil *Squalidæ*, of the United States.

Jour. Acad. Nat. Sci. Phila., 1848, pp. 139-147, pls. xviii-xxi.

—— 1849 A

Monograph of the fossil *Squalidæ*, of the United States.

Jour. Acad. Nat. Sci. Phila., i, pp. 191-206, with pls. xxv-xxvii.

Gibbes, Robert W.—Cont'd. 1850 A

On *Mosasaurus* and other allied genera in the United States.

Proc. Amer. Assoc. Adv. Sci., 2d meeting, 1849, Cambridge, Mass., p. 77.

—— 1850 B

New species of fossil *Myliobates*, from the Eocene of South Carolina, and new fossils from the Cretaceous, Eocene, and Pliocene of South Carolina, Alabama, and Mississippi.

Proc. Amer. Assoc. Adv. Sci., 2d meeting, Cambridge, Mass., 1849, pp. 193-194.

—— 1850 C

Remarks on the fossil *Equus*.

Proc. Amer. Assoc. Adv. Sci., 3d meeting, Charleston, S. C., 1850, pp. 66-68.

From Ashley River, S. C.; supposed to be taken from Eocene deposits.

—— 1850 D

Remarks on the northern *Elephas* of Prof. Agassiz.

Proc. Amer. Assoc. Adv. Sci., 3d meeting, Charleston, S. C., 1850, p. 69.

—— 1850 E

Remarks on *Mastodon angustidens*.

Proc. Amer. Assoc. Adv. Sci., 3d meeting, Charleston, S. C., 1850, pp. 69-70.

—— 1850 F

Fossils common to several formations.

Proc. Amer. Assoc. Adv. Sci., 3d meeting, Charleston, S. C., 1850, pp. 70-71.

—— 1850 G

New species of *Myliobates*, from the Eocene of South Carolina, with other genera not heretofore observed in the United States.

Jour. Acad. Nat. Sci. Phila. (2), i, pp. 299-300.

—— 1851 A

A memoir on *Mosasaurus* and three allied new genera, *Holcodus*, *Conosaurus*, and *Amphorosteus*.

Smithsonian Cont. to Knowledge, ii, art. v, pp. 1-13; pl. i-iii.

Gidley, J. W. 1900 A

A new species of Pleistocene horse from the staked plains of Texas.

Bull. Amer. Mus. Nat. Hist., xiii, pp. 111-116, with 5 figs. in the text.

Describes *Equus scotti*.

Giebel, C. G. 1847 A

Fauna der Vorwelt, mit steter Berücksichtigung der lebenden Thiere. Erster Band: Wirbelthiere. Erste Abtheilung: Säugethiere.

Pp. i-xi; 1-283. Leipzig, 1847.

Giebel, C. G.—Continued. 1847 B

Fauna der Vorwelt, mit steter Berücksichtigung der lebenden Thiere. Erster Band: Wirbelthiere. Zweite Abtheilung: Vögel und Amphibia.

Pp. i-xi; 1-218. Leipzig, 1847.

—— 1847 C

Koch's *Hydrarchos*.

Neues Jahrb. Mineralogie, 1847, pp. 717-721.

—— 1847 D

[Letter to Professor Brown.]

Neues Jahrb. Mineralogie, 1847, pp. 819-825.

Contains some observations on *Zeuglodon cetoides*.

—— 1848 A

Fauna der Vorwelt, mit steter Berücksichtigung der lebenden Thiere. Erster Band: Wirbelthiere. Dritte Abtheilung: Fische.

Pp. i-xii; 1-467. Leipzig, 1848.

—— 1852 A

Ueber die Gebissformel der Spitzmäuse.

Archiv Naturgesch., xviii, pp. 222-227.

—— 1857 A

Zur Osteologie der Waschbären (*Procyon*).

Zeitschr. gesammt. Naturwiss., 1857, pp. 349-373.

—— 1859 A

Zur Osteologie der Murmelthiere.

Zeitschrift gesammt. Naturwiss., xiii, pp. 299-309.

Describes osteology of *Arctomys monax*.

—— 1866 A

Die Wirbelzahlen am Vogelskelet.

Zeitschr. gesammt. Naturwiss., xxviii, pp. 20-29.

A list showing the number of vertebræ occurring in each of 451 species of birds belonging to various orders and families.

—— 1866 B

Osteologie der Klapperschlangen.

Zeitschr. gesammt. Naturwiss., xxviii, pp. 172-180.

The osteology of *Crotalus*.

—— 1867 A

Schädel von *Dasypus gigas*.

Zeitschr. gesammt. Naturwiss., xxx, pp. 545-547.

—— 1872 A

Schädel der *Felis concolor F. eyra*, und *F. yaguarundi*.

Zeitschr. gesammt. Naturwiss., xl, pp. 431-432.

Giebel, C. G.—Continued. 1877 A

Das Skelet des westafrikanischen *Crocodilus cataphractus*.

Zeitschr. gesammt. Naturwiss. (3), 1877, ii, pp. 105-113, with pls. 7-10.

—— 1879 A

Marsh's neue Mittheilungen über die jurassischen Dinosaurier Nord-Amerikas.

Zeitschr. gesammt. Naturwiss. (3), iv, pp. 316-318.

A note on some of the genera of Dinosaurs described by Professor Marsh during the years 1878 and 1879.

—— 1880 A

Charakteristik der Hasenschädel.

Zeitschr. gesammt. Naturwiss. (3), v, pp. 318-340, with pls. viii-x.

Gilbert, G. K. 1871 A

Remains of a mastodon.

Proc. Lyc. Nat. Hist. New York, 1871, pp. 220-221.

Describes geological position of mastodon found at St. Johns, Auglaize County, Ohio.

Gilbert, J. Z. 1898 A

On the skull of *Xerobates* (?) *undata* Cope.

Kansas Univ. Quarterly, vii, pp. 143-148, with 4 figs. in the text.

Gill, Theodore. 1861 A

Catalogue of the fishes of the eastern coast of North America.

Proc. Acad. Nat. Sci. Phila., 1861, pp. 1-63.

This paper has a pagination distinct from that of the remainder of the volume which contains it.

—— 1862 A

Analytical synopsis of the order of *Squali*, and revision of the nomenclature of the genera.

Annals Lyc. Nat. Hist. of New York, vii, pp. 367-408.

—— 1865 A

[Description of the genus *Elasmognathus*.]

Proc. Acad. Nat. Sci. Phila., 1865, p. 183.

—— 1866 A

Prodrome of a monograph of the *Pinnipedes*.

Communications of the Essex Institute, v, pp. 3-13.

—— 1871 A

On the relations of the orders of mammals.

Proc. Amer. Assoc. Adv. Sci., 19th meeting, Troy, 1870, pp. 267-270.

Gill, Theodore—Continued. 1871 B

Synopsis of the primary subdivisions of the cetaceans.

Communications of the Essex Institute, vi, pp. 121-126.

—— 1872 A

On the characteristics of the primary groups of the class of mammals.

Proc. Amer. Assoc. Adv. Sci., 20th meeting, Indianapolis, 1871, pp. 284-306.

See also Amer. Naturalist, v, pp. 526-533.

—— 1872 B

Arrangement of the families of mammals and synoptical tables of characters of the subdivisions of mammals.

Smithsonian Miscel. Coll., No. 230, pp. i-vi, 1-98.

—— 1872 C

Arrangement of the families of fishes, or classes *Pisces*, *Marsipobranchii*, and *Leptocardii*.

Smithsonian Miscel. Coll., No. 247, 1872, pp. i-xlvi; 1-49.

—— 1873 A

On the affinities of the sirenians.

Proc. Acad. Nat. Sci. Phila., 1873, pp. 262-273.

—— 1873 B

On the homologies of the shoulder-girdle of the dipnoans and other fishes.

Ann. and Mag. Nat. Hist. (4), xi, pp. 173-178.

Extracted from "Arrangement of the families of fishes."

—— 1873 C

On the genetic relations of the cetaceans and the methods involved in discovery.

Amer. Naturalist, vii, pp. 19-29.

A statement of the author's views regarding the higher groups and their relations. A reply to Dr. Brandt, of St. Petersburg.

—— 1873 D

On the limits of the class of fishes.

Amer. Naturalist, vii, pp. 71-79.

—— 1875 A

Synopsis of Insectivorous mammals.

Bull. U. S. Geol. and Geog. Surv. Terr., i, (2), Bull. No. 2, pp. 91-120.

—— 1883 A

Nomenclature of the Xiphiids.

Proc. U. S. Nat. Mus., v, pp. 485-486.

—— 1883 B

On the classification of the Insectivorous mammals.

Bull. Philos. Soc. Washington, v, pp. 118-120.

—— 1883 C

Note on the affinities of the Ephippiids.

Proc. U. S. Nat. Mus., v, pp. 557-560.

Gill, Theodore—Continued. 1884 A

The relations of *Didymodus*, or *Diplodus*.

Science, iii, pp. 429-430.

—— 1884 B

The oldest living type of vertebrate, *Chlamydoselachus*.

Science, iii, p. 346.

Contains a classification of the sharks.

—— 1884 C

The oldest living type of vertebrates.

Science, iv, p. 524.

—— 1884 D

Synopsis of the plectognath fishes.

Proc. U. S. Nat. Mus., vii, pp. 411-427.

—— 1888 A

Eutheria and *Prototheria*.

Amer. Naturalist, xxii, pp. 258-259.

Shows that the sense in which Dr. Gill originally used the above terms is not the same as that in which they were used by Professor Huxley.

—— 1889 A

On the classification of the mail-cheeked fishes.

Proc. U. S. Nat. Mus., xi, pp. 567-592.

This paper deals with the anatomy and classification of the mail-cheeked fishes, and contains explanations of various anatomical terms; also references to the literature bearing on the group.

—— 1891 A

On the relations of *Cyclopteroidea*.

Proc. U. S. Nat. Mus., xiii, pp. 361-376, with pls. xxviii-xxx.

—— 1893 A

Families and subfamilies of fishes.

Mem. Nat. Acad. Sci., vi, pp. 125-138.

—— 1894 A

The nomenclature of the *Myliobatidæ*, or *Aëtobatidæ*.

Proc. U. S. Nat. Mus., xvii, pp. 111-114.

—— 1894 B

The nomenclature of the family *Pœciliidæ*, or *Cyprinodontidæ*.

Proc. U. S. Nat. Mus., xvii, pp. 115-116.

—— 1894 C

The differential characters of the *Salmonidæ* and *Thymallidæ*.

Proc. U. S. Nat. Mus., xvii, pp. 117-122.

—— 1895 A

Notes on the nomenclature of *Scymnus*, or *Scymnorhinus*, a genus of sharks.

Proc. U. S. Nat Mus., xviii, pp. 191-193.

Scymnus preoccupied in entomology and to be replaced by *Scymnorhinus*.

Gill, Theodore—Continued. 1896 A

Notes on the synonymy of the *Torpedinidæ*, or *Narcobatidæ*.

Proc. U. S. Nat. Mus., xviii, pp. 161-165.

—— 1896 B

Note on the nomenclature of the Pœcilioid fishes.

Proc. U. S. Nat. Mus., xviii, pp. 221-224.

—— 1896 C

Fishes, living and fossil.

Science (2), iii, pp. 909-917.

A review of Dr. Bashford Dean's book, "Fishes, living and fossil."

—— 1900 A

The earliest use of the names *Sauria* and *Batrachia*.

Science (2), xii, p. 730.

Gill, T., and **Coues**, E. 1877 A

Material for a bibliography of North American mammals.

Report U. S. Geol. Surv. Terr., F. V. Hayden, xi, appendix B, pp. 951-1081.

This bibliography contains about 3,000 titles of works on the mammals of North America.

Gilpin, Bernard. 1873 A

Observations on some fossil bones found in New Brunswick, Dominion of Canada.

Nova Scotia Inst. of Nat. Sci., iii, pp. 400-404.

Records finding of cetacean bones, supposed to belong to *Beluga vermontana*.

Goddard, ——. 1841 A

Examination of so-called *Missourium kochii*.

Proc. Acad. Nat. Sci. Phila., i, pp. 115-116.

Godman, J. D. 1825 A

Description of the os hyoides of the mastodon.

Jour. Acad. Nat. Sci. Phila., iv, pp. 67-72, with pl. ii.

—— 1828 A

American natural history.

Vols. i-iii, Philadelphia. 8vo.

Vol. i was published 1825; ii, 1826; iii, 1828. This work contains descriptions and figures of some of the earlier known American fossil vertebrates.

—— 1830 A

Description of a new genus and new species of extinct mammiferous quadruped.

Trans. Amer. Philos. Soc. (2), iii, pp. 478-485, pls. xvii, xviii.

Description and figures of *Tetracaulodon mastodontoideum*, Godm.

Göldi, Emil A. 1883 A

Kopfskelet und Schultergürtel von *Loricaria cataphracta*, *Balistes capriscus*, und *Accipenser ruthenus*.

Zoolog. Anzeiger, vi, pp. 420-422.

—— 1884 A

Kopfskelet und Schultergürtel von *Loricaria cataphracta*, *Balistes capriscus*, und *Accipenser ruthenus*.

Jenaische Zeitschr., xvii (x), pp. 401-451, with pls. iv-vi.

Goeppert, Ernst. 1895 A

Untersuchungen zur Morphologie der Fischrippen.

Morphologisches Jahrbuch, xxiii, pp. 145-217, with pls. xiii-xvi and 21 figs. in text.

Contains a list of papers on the subject.

—— 1895 B

Zur Kenntniss der Amphibienrippen.

Morpholog. Jahrbuch, xxii, pp. 441-448, with 5 figs. in text.

—— 1896 A

Die Morphologie der Amphibienrippen.

Festschrift zum 70sten Geburtstage von Carl Gegenbaur, i, pp. 395-436, with pls. i, ii, and 10 figs. in the text.

Appended is a list of the works of other writers on the subject.

Goethe, Johann Wolfgang. 1831 A

Ueber den Zwischenkiefer des Menschen und der Thiere.

Nov. Act. Acad. Caes. Leop.-Carol., xv, pp. 3-48, with pls. i-v.

Goette, Alex. 1878 A

Beiträge zur vergleichenden Morphologie des Skeletsystems der Wirbelthiere. II Die Wirbelsäule und ihre Anhänge.

Archiv Mikroskop. Anatomie, xv, pp. 442-541; pls. xxviii-xxxiii.

Treats of the structure and homologies of the elements of the vertebral column and homology of ribs, etc., of Ganoids and Elasmobranchs.

—— 1899 A

Ueber die Entwicklung des knöchernen Rückenschildes (Carapax) der Schildkröten.

Zeitschr. wissensch. Zoologie, lxvi, pp. 407-434, with pls. xxvii-xxix.

Goldfuss, August. 1845 A

Der Schädelbau des *Mosasaurus*, durch Beschreibung einer neuen Art dieser Gattung erläutert.

Nov. Act. Acad. Caes. Leop.-Carol. Nat. Curiosorum, xxi, pp. 173-200, with pls. vi-ix.

Abstract appeared in Neues Jahrb. Min., 1847, pp. 122-125.

Goldfuss, August—Continued. 1847 A

Beiträge zur vorweltlichen Fauna des Steinkohlengebirges.

Herausgegeben von dem naturhistorischen Vereine für die preussischen Rheinlande, Bonn, 1847, pp. 1-28, with pls. i-v.

—— 1849 A

Description of the *Orthacanthus dechenii*.

Quart. Jour. Geol. Soc., v, pp. 21-23, of translations and notices.

From "Beiträge zur vorweltlichen Fauna des Steinkohlengebirges."

Goode, G. Brown. 1882 A

The taxonomic relations and geographical distribution of the members of the swordfish family.

Proc. U. S. Nat. Mus., iv, pp. 415-433.

Goodrich, E. S. 1894 A

On the fossil *Mammalia* from the Stonesfield slate.

Quart. Jour. Mic. Sci., xxxv, pp. 407-432, with pl. xxvi.

Pp. 425-429 contain a discussion of the primitive mammalian molar.

Gorski, Constantin. 1858 A

Einige Bemerkungen über die Beckenknochen der beschuppten Amphibien.

Archiv f. Anat., Physiol. u. wissensch. Medicin., Jahrg. 1858, pp. 382-389.

Grabbe, A. 1884 A

Beitrag zur Kenntniss der Schildkröten des deutschen Wealden.

Zeitschr. deutsch. geol. Gesellsch., xxxvi, pp. 17-28, with pl. i.

Discusses structure and relations of *Pleurosternon*.

Grant, E. 1842 A

On the structure and history of the mastodontoid animals of North America.

Proc. Geol. Soc. Lond. iii, pp. 770-771.

Grassi, B. 1883 A

Beiträge zur näheren Kenntniss der Entwicklung der Wirbelsäule der Teleostier.

Morpholog. Jahrbuch, viii, pp. 457-473.

Gratacap, L. P. 1886 A

Fish remains and tracks in the Triassic rocks at Weehawken, N. J.

Amer. Naturalist, xx, pp. 243-246, with pls. xii and xiii, and 2 woodcuts in the text.

—— 1896 A

Fossils and fossilization.

Amer. Naturalist, xxx, pp. 902-912, 993-1003.

Grateloup, J. P. S. 1840 A

Beschreibung eines fossilen Stückes Kinnlade eines riesigen Saurier-Geschlechtes *Squalodon*, mit *Iguanodon* verwandt, aus dem Meeres-Sande von Léognan bei Bordeaux, pp. 8, 1 pl.

Neues Jahrbuch f. Min., 1841, pp. 830-832.

Abstract from Actes Acad. Roy. Sci. Bordeaux, 1840, p. 208. For original, see same volume Jahrbuch, pp. 567-568, a note from Grateloup, in which he recognizes the Delphinoid nature of this fossil. I have seen only the abstract here referred to.

Gratiolet, Pierre. 1858 A

Note sur un fragment de crâne trouvé à Montrouge, près Paris.

Bull. Soc. Géol. de France (2), pp. 620-625, with pl. v.

Describes *Odobenotherium lartetianum*.

Gray, Asa. 1846 A

Food of the mastodon.

Proc. Bost. Soc. Nat. Hist., ii, pp. 92-93.

Reprinted in Amer. Jour. Sci. (2), iii, p. 436.

Gray, J. E. 1837 A

General arrangement of the *Reptilia*.

Proc. Zool. Soc. Lond., 1837, v, pp. 131-132.

—— 1857 A

Observations on the species of the genus *Manatus*.

Proc. Zool. Soc. Lond., 1857, xxv, pp. 59-61.

—— 1865 A

Revision of the genera and species of *Mustelidæ* contained in the British Museum.

Proc. Zool. Soc. Lond., 1865, pp. 100-154, with pl. vii, and 3 text figs.

—— 1866 A

Catalogue of seals and whales in the British Museum.

Second edition, pp. 402, with 101 woodcuts in text.

—— 1867 A

Notice of a new species of American tapir, with observations on the skulls of *Tapirus*, *Rhinochœrus*, and *Elasmognathus* in the collections of the British Museum.

Proc. Zool. Soc. Lond., 1867, pp. 876-886, with pl. xlii, and 6 text figs.

—— 1867 B

Observations on the preserved specimens and skeletons of the *Rhinocerotidæ* in the collection of the British Museum and Royal College of Surgeons, including the descriptions of 3 new species.

Proc. Zool. Soc. Lond., 1865, pp. 1003-1032, with 6 text figs.

Gray, J. E.—Continued. 1868 A
Synopsis of the pigs (*Suidæ*) in the British Museum.
Proc. Zool. Soc. Lond., 1868, pp. 17–49.

—— 1868 B
Notes on the skulls of the species of dogs, wolves, and foxes (*Canidæ*) in the collection of the British Museum.
Proc. Zool. Soc. Lond., 1868, pp. 492–525, with 7 woodcuts in the text.

—— 1869 A
Catalogue of carnivorous, pachydermatous, and edentate *Mammalia* in the British Museum.
Pp. 398, with 47 woodcuts. London, 1869.

—— 1869 B
Notes on the families and genera of of tortoises (*Testudinata*), and on the characters afforded by the study of their skulls.
Proc. Zool. Soc. Lond., 1869, pp. 165–225, with pl. xv, and 20 figs. in the text.

—— 1869 C
On the bony dorsal shield of the male *Tragulus kanchil*.
Proc. Zool. Soc. Lond., 1869, p. 226, with 1 fig.

—— 1872 A
Description of the younger skull of Steller's sea bear (*Eumetopias stelleri*).
Proc. Zool. Soc. Lond., 1872, pp. 737–743, with 5 figs.

—— 1873 A
Notes on the mud tortoises (*Trionyx*, Geoffroy) and on the skulls of the different kinds.
Proc. Zool. Soc. Lond., 1873, pp. 38–72, with pl. viii and 13 text figs.
This paper presents a classification of the *Trionychia*, together with definitions of the genera adopted.

—— 1873 B
Notes on the genera of turtles (*Oiacopodes*), and especially on their skeletons and skulls.
Proc. Zool. Soc. Lond., 1873, pp. 395–411, with 3 figs. in the text.
In this paper is presented a classification of the *Cheloniidæ* and the *Dermochelyidæ*, together with definitions of the genera.

—— 1873 C
On the skulls and alveolar surfaces of land tortoises (*Testudinata*).
Proc. Zool. Soc. Lond., 1873, pp. 722–728, with pl. lx.

Green, Jacob. 1821 A
Some curious facts respecting the bones of the rattlesnake.
Amer. Jour. Sci. (1), iii, pp. 85–86.

Greene, Francis V. 1853 A
Chemical investigation of remains of fossil *Mammalia*.
Amer. Jour. Sci. (2), xvi, pp. 16–20.
See also Proc. Acad. Nat. Sci. Phila., vi, pp. 292–296.

Grinnell, G. B. 1881 A
Monograph by Professor Marsh on the *Odontornithes*, or toothed birds of North America.
Amer. Jour. Sci. (3), xxi, pp. 255–276, with 9 figs. in the text.

Grinnell, G. B., and **Dana**, E. S. 1876 A
On a new Tertiary lake basin.
Amer. Jour. Sci. (3), xi, pp. 126–128.

Gruber, W. 1859 A
Monographie des canalis supracondyloidei humeri und des processus supracondyloidei humeri et femoris der Säugethiere und des Menschen.
Mém. l'Acad. Imp. Sci. St. Pétersbourg, viii, pp. 53–128, with pls. i–iii.

Günther, Albert C. 1859 A
Catalogue of the Acanthopterygian fishes in the collection of the British Museum.
Vol. i, pp. i–xxxi; 1–524, containing families *Gasterosteidæ*, *Berycidæ*, *Percidæ*, *Aphredoderidæ*. London, 1859.

—— 1860 A
Catalogue of the Acanthopterygian fishes in the collection of the British Museum.
Vol. ii, pp. i–xxi, 1–548.
This volume contains the *Squamipinnes*, *Triglidæ*, *Sciænidæ*, *Sphyrænidæ*, *Scombridæ*, *Carangidæ*, *Xiphiidæ*, etc.

—— 1861 A
Catalogue of the Acanthopterygian fishes in the collection of the British Museum.
Vol. iii, pp. i–xxv, 1–586.

—— 1862 A
Catalogue of the fishes in the British Museum. Vol. iv, containing *Pomacentridæ*, *Labridæ*, etc.
Pp. i–xxii; 1–534.

—— 1864 A
Catalogue of the fishes of the British Museum. Vol. v, containing the families *Siluridæ*, *Characinidæ*, etc.
Pp. i–xxii, 1–455, London, 1864.

Günther, Albert C.—Continued. 1866 A

Catalogue of the fishes of the British Museum. Vol. vi, containing the families *Salmonidæ*, *Percopsidæ*, *Galaxidæ*, *Mormyridæ*, *Gymnarchidæ*, *Esocidæ*, *Umbridæ*, *Scombresocidæ Cyprinodontidæ*.

Pp. i-xv, 1-368, London, 1866.

—— 1867 A

Contribution to the anatomy of *Hatteria* (*Rhynchocephalus* Owen).

Philos. Trans. Roy. Soc., London, clvii, pp. 595-629, with pls. xxvi-xxviii.

—— 1868 A

Catalogue of the fishes of the British Museum.

Vol. vii, pp. i-xx, 1-512.

Contains families of the *Physostomi*.

—— 1870 A

Catalogue of the fishes of the British Museum.

Vol. viii, pp. i-xxv, 1-549.

This volume contains the families *Gymnotidæ*, *Symbranchidæ*, *Murænidæ*, *Pegasidæ;* also the *Lophobranchii*, *Plectognathi*, *Dipnoi*, *Ganoidei*, *Chondropterygii*, *Cyclostomata*, and the *Leptocardii*.

—— 1871 A

The new ganoid fish (*Ceratodus*) recently discovered in Queensland.

Nature, iv, pp. 406-408, 428-429.

—— 1871 B

Ceratodus and its place in the system.

Ann. and Mag. Nat. Hist. (4), vii, pp. 222-227.

—— 1872 A

Description of *Ceratodus*, a genus of Ganoid fishes recently discovered in rivers of Queensland, Australia.

Philosoph. Trans. Royal. Soc. Lond., clxi, pp. 511-571; pls. xxx-xlii.

—— 1877 A

The gigantic land tortoises (living and extinct) in the collection of the British Museum.

Pp. 96; pls. 54. London, 1877.

—— 1880 A

An introduction to the study of fishes.

Edinburgh, 1880, 8vo, pp. i-xvi; 1-720, with 321 figs. in the text.

—— 1881 A

Ichthyology.

Encyclop. Brit., 9th ed., xii, pp. 630-695, with 70 figs. in the text.

Günther, Albert C.—Continued. 1886 A

Reptiles.

Encyclop. Brit., 9th ed., xx, pp. 432-445, 465-478.

Dr. Günther's portion of the article on *Reptilia* treats of the history and literature of the subject, the various systems of classification, the general characters of the class, and the geological and geographical distribution. There are also lists of the most important works on the subject.

—— 1888 A

Tortoise.

Encyclop. Brit., 9th ed., xxiii, pp. 455-460, with 9 figs. in the text.

A popular account of tortoises and a scheme of classification.

Gürich, Georg. 1891 A

Ueber Placodermen und andere devonische Fischreste im Breslauer mineralogischen Museum.

Zeitschr. deutsch. geol. Gesellsch., xliii, pp. 902-911, with 5 figs. in the text.

—— 1891 B

Ueber einen neuen *Nothosaurus* von Gogolin in Oberschlesien.

Zeitschr. deutsch. geol. Gesellsch., xliii, pp. 967-970, with 2 figs. in the text.

Haacke, Wilhelm. 1888 A

Ueber die Entstehung des Säugetieres.

Biolog. Centralbl., viii, pp. 8-16.

—— 1893 A

Ueber die Entstehung des Säugetieres.

Biolog. Centralbl., xiii, pp. 719-732.

Haberlandt, G. 1876 A

Ueber *Testudo præceps* n. sp., die erste fossile Landschildkröte des Wiener Beckens.

Jahrbuch k.-k. geol. Reichsanstalt, xxvi, pp. 243-248, with pl. xvi.

Makes comparisons with Dr. Leidy's *T. culbertsonii*.

Habersham, Joseph.

See note under **Hodson**, W. B. 1846 A.

Haddon, A. C.

See **Bridge** and **Haddon**.

Haeckel, Ernst. 1895 A

Systematische Phylogenie der Wirbelthiere (*Vertebrata*). Dritter Theil des Entwurfs einer systematischen Phylogenie.

8vo; Berlin, 1895; pp. i-x; 1-660.

Hale, C. S. 1848 A

Geology of south Alabama.

Amer. Jour. Sci. (2), vi., pp. 354–363.

Hall, J. 1843 A

Geology of New York. Part iv, comprising the survey of the 4th geological district.

Pp. i–xxv; 1–687, with tables containing 74 figs. of organic remains and 19 pls. 4to. Albany, 1843.

—— 1846 A

On the geological relations of *Castoroides ohioensis*.

Proc. Bost. Soc. Nat. Hist., ii, pp. 167–168. Describes skull found near Clyde, N. Y.

—— 1846 B

Notice of the geological position of the cranium of the *Castoroides ohioensis*.

Jour. Boston Soc. Nat. Hist., v, pp. 385–391. This paper constitutes a portion of a joint article, by James Hall and Jeffries Wyman, on the skull of *Castoroides*. See Wyman, J., 1846 B.

—— 1871 A

Notes and observations on the Cohoes mastodon.

Twenty-first Ann. Report Regents Univ. N. Y., on condition of State Cabinet, pp. 99–148, with pls. iii–vii.

—— 1887 A

Note on the discovery of a skeleton of an elk, *Elaphus canadensis*, in the town of Farmington, Ontario County.

Sixth Ann. Report State Geologist, New York, for 1886, p. 39.

Hallman, E. 1837 A

Die vergleichende Osteologie des Schläfensbeins; zur Vereinfachung der herrschenden Ansichten bearbeitet.

Hannover, 1837. Pp. 1–130; pls. i–iv.

Hallowell, Edward. 1846 A

Remarks on some bones of a young mastodon.

Proc. Acad. Nat. Sci. Phila., iii, p. 130. See also p. 117.

Hambach, G. 1890 A

A preliminary catalogue of the fossils occurring in Missouri.

Geol. Surv. Missouri, Bull. No. 1, pp. 60–85. This contains, on pp. 80 and 81, an alphabetical list of the species of the fossil fishes found in Missouri, so tabulated as to show their stratigraphical distribution. On p. 82 are recorded four mammals which have been found fossil in the State. Since the list of Missouri fossils prepared by Chas. R. Keyes was published at a later date (1894), but few references are given in the present catalogue to Hambach's list. However, this list contains a number of species not before reported from Missouri. These are recorded in the present Catalogue.

Hammerschmidt, Carl E. 1848 A

Resultate geologischer, anatomischer, und zoologischer Untersuchungen über *Hydrarchos* Koch.

Haidinger's Berichte über die Mittheilungen von Freunden der Naturwissenschaften in Wien, iii, pp. 322–326.

Hancock, Albany, and **Atthey**, Thos. 1868 A

Notes on the remains of some reptiles and fishes from the shales of the Northumberland coal field.

Ann. and Mag. Nat. Hist. (4), i, pp. 266–278, 346–378, with pls. xiv–xvi.

Also in Nat. Hist. Trans. Northumberland and Durham, iii, 1868, pp. 66–120, with pls. i–iii.

—— —— 1868 B

Notes on the various species of *Ctenodus* obtained from the shales of the Northumberland coal field.

Nat. Hist. Trans. Northumberland and Durham, iii, pp. 54–66.

—— —— 1869 A

On a new Labyrinthodont amphibian from the Northumberland coal field, and on the occurrence in the same locality of *Anthracosaurus russelli*.

Nat. Hist. Trans. Northumberland and Durham, iii, pp. 310–319.

—— —— 1869 B

On the generic identity of *Climaxodus* and *Janassa*.

Ann. and Mag. Nat. Hist. (4), iv, pp. 322–328, pl. xii.

Also in Nat. Hist. Trans. Northumberland and Durham, iii, 1869, pp. 330–338.

—— —— 1870 A

Note on an undescribed fossil fish from the Newsham Coal shale, near Newcastle-upon-Tyne.

Ann. and Mag. Nat. Hist. (4), v, pp. 266–268. Describes as new genus *Archichthys*, now regarded as synonym of *Strepsodus*. The genus *Archichthys* founded on portion of a jaw with teeth.

—— —— 1871 A

A few remarks on *Dipterus* and *Ctenodus*, and on their relationship to *Ceratodus forsteri* Krefft.

Ann. and Mag. Nat. Hist. (4), vii, pp. 190–198, pls. xiii, xiv.

Also in Nat. Hist. Trans. Northumberland and Durham, iv, 1872, pp. 397–407, with pls. xiii, xiv.

Hancock, Albany, and **Atthey**, Thos.—Continued. 1872 A

Descriptive note on a nearly entire specimen of *Pleurodus rankinii*, on two new species of *Platysomus*, a new *Amphicentrum*, with remarks on a few other fish remains in the Coal-measures at Newham.

Ann. and Mag. Nat. Hist. (4), ix, pp. 249-262, with pls. xvii, xviii.

Also in Nat. Hist. Trans. Northumberland and Durham, 1872, iv, pp. 408-423, with pls. xv, xvi.

Hancock, Albany, and **Howse**, Richard. 1870 A

On *Janassa bituminosa* Schlotheim, from the marl slate of Midderidge, Durham.

Ann. and Mag. Nat. Hist. (4), v, pp. 47-62; pls. ii, iii.

Also in Nat. Hist. Trans. Northumberland and Durham, iii, 1869, pp. 339-357, with pls. x, xi.

—— —— 1872 A

On *Dorypterus hoffmanni* Germar, from the marl slates of Midderidge, Durham.

Nat. Hist. Trans. Northumberland and Durham, iv, pp. 243-268, with pls. ix, x.

Hannover, A. 1868 A

Recherches sur la structure et le développement des écailles et des épines chez les poissons cartilagineux.

Annales Sci. Naturelles, Zool. (5), ix, pp. 373-378.

Harlan, R. 1823 A

Observations on fossil elephant teeth, of North America.

Jour. Acad Nat. Sci. Phila., iii, pp. 65-67, pl. v.

—— 1824 A

On a new fossil genus of the order *Enalio Sauri* (of Conybeare).

Jour. Acad. Nat. Sci. Phila., iii, pp. 331-337, with pl. xii, figs. 1-5.

In this paper is described the new genus *Saurocephalus*, based on the new species *S. lanciformis*.

—— 1824 B

On an extinct species of crocodile not before described; and some observations on the geology of west Jersey.

Jour. Acad. Nat. Sci. Phila., iv, pp. 15-24, with pl. i.

Describes remains afterwards called *Crocodilus macrorhynchus*.

Harlan, R.—Continued. 1825 A

Fauna Americana; being a description of the mammiferous animals inhabiting North America.

8vo., pp. i-x, 1-318, Philadelphia: Published by Anthony Finley.

—— 1825 B

Notice of the plesiosaurus and other fossil reliquiæ from the State of New Jersey.

Jour. Acad. Nat. Sci. Phila., iv, pp. 231-236.

The "plesiosaurus" is *Priscodelphinus harlani* Leidy.

—— 1828 A

Note from R. Harlan, M. D., on the examination of the large bones disinterred at the mouth of the Mississippi River and exhibited in the city of Baltimore, Jan. 22, 1828.

Amer. Jour. Sci., xiv, pp. 186-187.

—— 1831 A

Description of the fossil bones of the *Megalonyx* discovered in "White Cave," Kentucky.

Jour. Acad. Nat. Sci. Phila., vi, pp. 269-288, pls. xii-xiv.

Describes *Megalonyx laqueatus*.

See for notice of this paper Neues Jahrbuch Min., 1836, p. 123. Also Amer. Jour. Sci., 1831, xx, pp. 414-415.

—— 1831 B

Description of the jaws, teeth, and clavicle of the *Megalonyx laqueatus*.

Monthly Amer. Jour. Geology and Nat. Sci., i, pp. 74-76, with pl. iii.

—— 1834 A

On some new species of fossil saurians found in America.

Report Brit. Assoc. Adv. Sci., 3d meeting, Cambridge, 1833, p. 440.

A brief abstract, naming only *Ichthyosaurus missouriensis*.

—— 1834 B

Critical notices of various organic remains hitherto discovered in North America.

Trans. Geol. Soc. of Pennsylvania, i, pt. i, pp. 46-112, Philadelphia, 1834.

See also Harlan, 1835 B; Edinburgh New Philos. Jour., xvii, pp. 342-362, xvii, pp. 28-40; Neues Jahrb. Min., 1836, pp. 99-109.

—— 1834 C

Notice of fossil bones found in the Tertiary formation of the State of Louisiana.

Trans. Amer. Philos. Soc., iv, pp. 397-403, pl. xx, figs. 1, 2.

The bones are assigned to the genus *Basilosaurus*.

Harlan, R.—Continued. 1834 D

Notice of the discovery of the remains of the *Ichthyosaurus* in Missouri, N. A.

Trans. Amer. Philos. Soc., iv, pp. 405–409, pl. xxx, figs. 3–8.

Describes *Ichthyosaurus missouriensis*, but a note follows which states that the fossil must be assigned to some new genus. This is not named.

—— 1834 E

Announcement of the finding of *Ichthyosaurus missouriensis* and *Basilosaurus*.

Bull. Soc. Géol. de France (1), iv, p. 124.

No descriptions are furnished.

—— 1835 A

Observations on a large skeleton recently disinterred from the mouth of the Mississippi River.

Med. and Phys. Researches, pp. 76–77.

—— 1835 B

Critical notices of various organic remains hitherto discovered in North America.

Med. and Phys. Researches, pp. 253–318.

See also Harlan, 1834 B.

—— 1835 C

Description of the fossil bones of the *Megalonyx*, recently discovered in the United States, N. A.

Med. and Phys. Researches, pp. 319–336, with pls. xii–xvi.

—— 1835 D

Observations on the fossil bones found in the Tertiary formation in the State of Louisiana.

Med. and Phys. Researches, pp. 337–343.

Treats of *Basilosaurus*.

—— 1835 E

Description of the Ichthyosaurian remains recently discovered in the State of Missouri.

Med. and Phys. Researches, pp. 344–348, with 1 pl. of 6 figs.

Treats of *Ichthyosaurus missouriensis*.

—— 1835 F

Description of the remains of the *Basilosaurus*, a large fossil marine animal recently discovered in the horizontal limestone of Alabama.

Med. and Phys. Researches, pp. 349–358, with pls. xxvi–xxviii.

—— 1835 G

Observations on the fossil elephant teeth of North America.

Med. and Phys. Researches, pp. 359–361, with 1 pl.

The teeth figured are probably those of *E. primigenius*.

Harlan, R.—Continued. 1835 H

Description of a new fossil genus of the order *Enalio Sauri* (of Conybeare).

Med. and Phys. Researches, pp. 362–366, with 1 pl.

—— 1835 I

Description of an extinct species of crocodile not before described, and some observations on the geology of west Jersey.

Med. and Phys. Researches, pp. 369–381, with 1 pl. of *Crocodilus macrorhynchus*.

—— 1835 J

Notice of plesiosaurian and other fossil reliquiæ from the State of New Jersey.

Med. and Phys. Researches, pp. 382–385, with 1 pl.

—— 1839 A

Notice of the discovery of the *Basilosaurus* and the *Batrachiosaurus*.

Proc. Geol. Soc. Lond., iii, pp. 23–24.

Also in Lond. and Edinb. Philos. Mag., xiv, p. 302.

No adequate descriptions are given of the genera proposed.

—— 1839 B

[Letter regarding *Basilosaurus* and *Batrachotherium*.]

Bull. Soc. Géol. France, x, pp. 89–90.

See also Neues Jahrb. Min., 1840, p. 741, for abstract.

—— 1839 C

On the discovery of the *Basilosaurus* and the *Batrachiosaurus*.

Lond. and Edinb. Philos. Mag. and Jour. Sci., xiv, p. 302.

See also Ann. Sci. Naturelles (2), xii, p. 221.

—— 1840 A

A letter from Dr. Harlan addressed to the president [of the Geol. Soc., London] on the discovery of the remains of the *Basilosaurus*, or *Zeuglodon*.

Trans. Geol. Soc. Lond. (2), vi, pp. 67–68.

—— 1842 A

Bones of the *Orycterotherium*.

Amer. Jour. Sci., xliii, p. 392.

—— 1842 B

Notice of two new fossil mammals from Brunswick canal, Georgia; with observations on some of the fossil quadrupeds of the United States.

Amer. Jour. Sci., xliii, pp. 141–144; pl. iii.

Harlan, R.—Continued. 1842 C

Description of the bones of a fossil animal of the order *Edentata*.

Proc. Amer. Philos. Soc., ii, pp. 109-111.

Describes the new genus and species *Orycterotherium missouriense*.

A notice of this paper was published in Ann. and Mag. Nat. Hist., 1842, x, p. 72.

—— 1842 D

Description of a new extinct species of dolphin from Maryland.

Second Bull. of Proc. Nat. Institute, pp. 195-196, with 3 large pls.

Describes *Delphinus calvertensis* Harl.

—— 1842 E

[A list of fossil bones from Brunswick canal, presented by J. Hamilton Cooper, Darien, Ga.]

Proc. Acad. Nat. Sci. Phila., 1842, pp. 189-190.

—— 1843 A

Remarks on Mr. Owen's letter to the editors on Dr. Harlan's new fossil *Mammalia*.

Amer. Jour. Sci., xlv, pp. 208-211.

—— 1843 B

Description of the bones of a new fossil animal of the order *Edentata*.

Amer. Jour. Sci. (1), xliv, pp. 69-80, with pls. i-iii.

Description with figures of *Orycterotherium missouriense*.

Harpe, Ph. de la. See **Pictet, Gaudin** and **Harpe**.

Harrison, J. See **Howes** and **Harrison**.

Harrison, R. G. 1894 A

Ectodermal or mesodermal origin of the bones of Teleosts.?

Anatom. Anzeiger, x, pp. 139-143, with 3 figs.

The author denies Klaatsch's view that the bones are of ectodermal origin.

Hartlaub, Clemens. 1886 A

Berträge zur Kenntniss der Manatus-Arten.

Zoolog. Jahrbücher, i, pp. 1-112, with pls. i-iv and 13 figs. in the text.

An important work. In the beginning there is found a list of papers and memoirs on the subject.

Hartmann, R. 1893 A

Ueber die Feliden-Gattung *Machærodus*.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1893, pp. 88-94.

Hartt, Ch. Fred. 1871 A

Discovery of mastodon remains at Motts Corners, near Ithaca, N. Y.

Amer. Naturalist, v, pp. 314-315.

Hasse, C. 1876 A

Die fossilen Wirbel.

Morpholog. Jahrbuch, ii, pp, 449-477, with pls. xxx-xxxi.

—— 1877 A

Die fossilen Wirbel. Die fossilen *Squatinæ*.

Morpholog. Jahrbuch, iii, pp. 328-351, with pls. xvii-xviii.

—— 1878 A

Das natürliche System der Elasmobranchier auf Grundlage des Baues und der Entwicklung der Wirbelsäule.

Zoolog. Anzeiger, i, pp. 144-148; 167-172.

—— 1879 A

Das natürliche System der Elasmobranchier auf Grundlage des Baues und der Entwicklung ihrer Wirbelsäule. Eine morphologische und paläontologische Studie. Allgemeiner Theil.

Pp. i-vi; 1-76, with 2 pls, and 6 wood cuts. Jena, 1879.

See for continuation of this work Hasse, C., 1882 A.

—— 1879 B

Ueber den Bau und über die Entwicklung des Knorpels bei den Elasmobranchiern.

Zoolog. Anzeiger, ii, pp. 325, 351-355, 371-374.

—— 1882 A

Das natürliche System der Elasmobranchier auf Grundlage des Baues und der Entwicklung ihrer Wirbelsäule. Eine morphologische und paläontologische Studie. Besonderer Theil.

Pp. 1-285, with 40 pls. Jena., 1882.

For beginning of this work see Hasse, C. 1879 A. For conclusion, Hasse, C., 1885 A.

—— 1885 A

Das natürliche System der Elasmobranchier auf Grundlage des Baues und der Entwicklung ihrer Wirbelsäule. Eine morphologische und paläontologische Studie. Ergänzungsheft.

Pp. 1-27, with 1 pl. Jena, 1885.

For earlier parts of this work see Hasse, C., 1879 A, and Hasse, C., 1882 A.

—— 1893 A

Allgemeine Bemerkungen über die Entwicklung und die Stammesgeschichte der Wirbelsäule.

Anatom. Anzeiger, viii, pp. 288-289.

Haswell, William A. 1883 A

On the structure of the paired fins of *Ceratodus*, with remarks on the general theory of the vertebrate limb.

Proc. Linnean Soc. N. S. Wales (1), vii, pp. 2-11, with pl. i.

Haswell, William A.—Cont'd. 1884 A

Studies on the Elasmobranch skeleton.

Proc. Linnean Soc. N. S. Wales (1), ix, pp. 71-119, with pls. i and ii.

Hatcher, J. B. 1893 A

The Ceratops beds of Converse County, Wyo.

Amer. Jour. Sci. (3), xlv, pp. 135-144.

—— 1893 B

The Titanotherium beds.

Amer. Naturalist, xxvii, pp. 204-221, with 8 figs. in the text.

—— 1894 A

A median-horned rhinoceros from the Loup Fork beds of Nebraska.

Amer. Geologist, xiii, pp. 149-150.

—— 1894 B

Discovery of *Diceratherium*, the two-horned rhinoceros, in the White River beds of South Dakota.

Amer. Geologist, xiii, pp. 360-361.

—— 1894 C

On a small collection of vertebrate fossils from the Loup Fork beds of northwestern Nebraska; with note on the geology of the region.

Amer. Naturalist, xxviii, pp. 236-248, pls. i, ii.

Describes as new *Aelurodon taxoides* and *A. meandrinus*. Treats also of *Aphelops fossiger* and *Teleoceras major*.

Abstract in Princeton Coll. Bull., vi, p. 54, 1894.

—— 1895 A

On a new species of *Diplacodon*, with a discussion of the relations of that genus to *Telmatotherium*.

Amer. Naturalist, xxix, pp. 1084-1091, with pls. xxxviii-xxxix, and 2 figs. in the text.

—— 1895 B

Discovery, in the Oligocene of South Dakota, of *Eusmilus*, a genus of saber-toothed cats new to North America.

Amer. Naturalist, xxix, pp. 1091-1093.

Description of *Eusmilus dakotensis*.

—— 1895 C

The Princeton scientific expedition of 1895.

Princeton Coll. Bull., vii, pp. 95-98.

—— 1896 A

Some localities for Laramie mammals and horned dinosaurs.

Amer. Naturalist, xxx, pp. 112-120, with map on pl. iii.

Hatcher, J. B.—Continued. 1896 B

Recent and fossil tapirs.

Amer. Jour. Sci. (4), i, pp. 161-180, with pls. ii-v and 2 figs. in the text.

Notice of this paper by M. Schlosser appears in Neues Jahrb. Min. 1899, ii, pp. 314-316.

—— 1897 A

Diceratherium proavitum.

Amer. Geologist, xx, pp. 313-316, with pl. ix.

Regarded as distinct from *Aceratherium tridactylum*.

—— 1900 A

The Carnegie Museum palæontological expeditions of 1900.

Science (2), xii, pp. 718-720.

Records finding of specimen of *Platacodon nanus*, and the determination that it is a fish.

—— 1900 B

Vertebral formula of *Diplodocus* (Marsh).

Science (2), xii, pp. 828-830.

Hawkins, B. W. 1874 A

On the pelvis of *Hadrosaurus*.

Proc. Acad. Nat. Sci. Phila., 1874, pp. 90-91.

—— 1875 A

Pelvis of *Hadrosaurus*.

Proc. Acad. Nat. Sci. Phila., 1875, p. 329.

Hay, O. P. 1895 A

On the structure and development of the vertebral column of *Amia*.

Pubs. Field Columb. Mus., Zool., i, pp. 1-54, pls. i-iii.

—— 1895 B

On certain portions of the skeleton of *Protostega gigas*.

Pubs. Field Columb. Mus., Zool., i, pp. 57-62, pls. iv, v.

—— 1895 C

Description of a new species of *Petalodus* (*P. securiger*), from the Carboniferous of Illinois.

Jour. Geology, iii, pp. 561-564, with 2 figs. in the text.

—— 1896 A

On the skeleton of *Toxochelys latiremis*.

Pubs. Field Columb. Mus., Zool., i, pp. 101-106, pls. xiv, xv.

—— 1896 B

The structure and mode of development of the vertebral column.

Science (2), iv, pp. 959-960.

—— 1898 A

Protospondyli and *Aetheospondyli* of A. S. Woodward.

Science (2), vii, p. 358.

Hay, O. P.—Continued. 1898 B

Observations on the genus of Cretaceous fishes called by Prof. Cope *Portheus.*

Science (2), vii, p. 646.

Shows that Leidy's *Xiphactinus* is identical with Cope's later published *Portheus.*

—— 1898 C

Classification of the Amioid and Lepisosteoid fishes.

Amer. Naturalist, xxxii, pp. 341-349.

—— 1898 D

Observations on the genus of fossil fishes called by Professor Cope *Portheus*, by Dr. Leidy *Xiphactinus.*

Zool. Bulletin, ii, pp. 25-54, with 16 figs. in the text.

—— 1898 E

Notes on species of *Ichthyodectes*, including the new species *I. cruentus*, and on the related and herein established genus *Gillicus.*

Amer. Jour. Sci. (4), vi, pp. 225-232, with 5 figs. in the text.

—— 1898 F

On *Protostega*, the systematic position of *Dermochelys*, and the morphogeny of the chelonian carapace and plastron.

Amer. Naturalist, xxxii, pp. 929-948, with 3 figs. in the text.

—— 1899 A

On the names of certain North American fossil vertebrates.

Science (2), ix, pp. 593-594.

The generic name *Wortmania* is proposed for *Hemiganus otariidens* Cope; *Miolabis* for *Procamelus robustus; Homogalax* for *Systemodon primævus; Equus eous* for *E. intermedius* Cope.

—— 1899 B

On one little known and one hitherto unknown species of *Saurocephalus.*

Amer. Jour. Sci. (4), vii, pp. 299-304, with 5 figs. in the text.

—— 1899 C

Notes on the nomenclature of some North American fossil vertebrates.

Science (2), x, pp. 253-254.

New generic name proposed, *Adjidaumo;* new specific names, *Canis* (?) *marshii, Cynodictis hylactor.*

—— 1899 D

Descriptions of two new species of tortoises from the tertiary of the United States.

Proc. U. S. Nat. Mus., xxii, pp. 21-24, with pls. iv-vi.

Describes *Hadrianus schucherti* and *Acherontemys heckmani.*

Hay, O. P.—Continued. 1899 E

On some changes in the names, generic and specific, of certain fossil fishes.

Amer. Naturalist, xxxiii, pp. 783-792.

—— 1899 F

A census of the fossil *Vertebrata* of North America.

Science (2), x, pp. 681-684.

This paper purports to give the number of described species and genera belonging to each of the large groups of fossil vertebrates.

—— 1899 G

On the nomenclature of certain American fossil vertebrates.

Amer. Geologist, xxiv, pp. 345-349.

—— 1900 A

Descriptions of some vertebrates of the Carboniferous age.

Proc. Amer. Philos. Soc., xxxix, pp. 96-123, with pl. vii and 3 text figs.

New species described are *Dittodus lucasi, Cladodus girtyi, Rhizodopsis mazonius, Strepsodus arenosus, S. dawsoni,* and *Elonichthys peltigerus hypsilepis.*

Hay, Robert. 1885 A

Notes on the fossil jaw of bison from the Pliocene of Norton County.

Trans. Kansas Acad. Sci., ix, p. 98.

Haycraft, John Berry. 1891 A

The development of the carapace of the *Chelonia.*

Trans. Roy. Soc., Edinburgh, xxxvi, pp. 335-342, with pl. xxxvi.

Hayden, F. V. 1858 A

Tertiary basin of White and Niobrara rivers.

Proc. Acad. Nat. Sci. Phila., pp. 147-158.

On pp. 157-158 is found a list of all the fossil Tertiary vertebrates known at that time from that region.

—— 1858 B

Explorations under the War Department. Explanations of a second edition of a geological map of Nebraska and Kansas, based upon information obtained in an expedition to the Black Hills, under command of Lieut G. K. Warren, Top. Engr., U. S. A.

Proc. Acad. Nat. Sci. Phila., 1858, pp. 139-158.

Contains order of Tertiary beds and a list of fossil vertebrates.

An abstract of this paper appeared in Amer. Jour. Sci., 1858, xxvi, pp. 404-408.

—— 1866 A

Discovery of a mastodon tooth near Fort Kearney and another opposite St. Louis.

Proc. Acad. Nat. Sci., Phila., p. 316.

Occupies two and a half lines.

Hayes, Seth. 1895 A

An examination and description of mastodon and accompanying mammalian remains found near Cincinnati, June, 1894.

Jour. Cincinnati Soc. Nat. Hist., xvii, pp. 217-226.

Haymond, Rufus. 1844 A

Notice of remains of *Megatherium*, *Mastodon*, and Silurian fossils.

Amer. Jour. Sci. (1), xlvi, p. 294-296.

A letter to the senior editor.

Hays, Isaac. 1830 A

Description of a fragment of the head of a new fossil animal discovered in a marl pit near Moorestown, N. J.

Trans. Amer. Philos. Soc. (2), iii, pp. 471-477, pl. xvi.

Proposal of new genus *Saurodon* with species *S. lanciformis* and *S. leanus* (*leax*).

—— 1834 A

Description of specimens of inferior maxillary bones of mastodons in the cabinet of the American Philosophical Society, with remarks on the genus *Tetracaulodon* (Godman), etc.

Trans. Amer. Philos. Soc. (2), iv, pp. 317-339, with pls. xx-xxix.

—— 1841 A

[Remarks on collection of bones, mostly of *Mastodon*, exhibited by Dr. Koch.]

Proc. Amer. Phil. Soc., ii, pp. 102-103, 105-106.

—— 1842 A

[Review of paper by Prof. Rich. Owen on Koch's collection of mammalian remains, especially of the genus *Tetracaulodon*.]

Proc. Amer. Philos. Soc., ii, pp. 183-184.

—— 1842 B

[On the mastodontoid animals in the collection of Mr. Koch.]

Proc. Amer. Phil. Soc., ii, pp. 264-266.

—— 1843 A

On the family *Proboscidea*, their general character and relations, their mode of dentition, and geological distribution.

Proc. Amer. Phil. Soc., iii, pp. 44-48.

—— 1844 A

[Remarks on bones of "*Tetracaulodon*," mastodon, and elephant.]

Proc. Amer. Philos. Soc., iv, pp. 30-43.

Hays, Isaac—Continued. 1846 A

[Remarks in regard to recently discovered mastodons in New York and New Jersey.]

Proc. Amer. Philos. Soc., iv, p. 269.

—— 1852 A

[Remarks on tooth of fossil tapir from North Carolina.]

Proc. Acad. Nat. Sci. Phila., vi, p. 53.

See also **Horner** and **Hays**.

Hazeltine, John. 1835 A

Fossil tooth.

Amer. Jour. Sci., xxvii, pp. 166-168.

Describes a fossil jaw containing teeth which appear to have belonged to a young mastodon. Found in Chautauqua County, N. Y.

Hébert, Edmund. 1855 A

Note sur le tibia du *Gastornis parisiensis*.

Comptes rend. Acad. Sci., Paris, xl, pp. 579-582.

—— 1855 B

Note sur le fémur du *Gastornis parisiensis*.

Comptes rend. Acad. Sci,, Paris, xl, pp. 1214-1217.

—— 1855 C

Tableau des fossiles de la craie de Meudon et description de quelques espèces nouvelles.

Mém. Soc. géol. de France, (2), v, pp. 345-374, with pls. xxvii-xxix.

This paper is quoted by A. S. Woodward for 1854.

—— 1856 A

Recherches sur la faune des premiers sédiments tertiaires Parisiens (mammifères pachydermes du genre *Coryphodon*).

Ann. Sci. Naturelles (4), Zool., vi, pp. 87-136, with pls. iii, iv.

Heckel, Joh. Jakob. 1843 A

Abbildungen und Beschreibungen der Fische Syriens, nebst einer neuen Classification und Characteristik sämmtlicher Gattungen der Cyprinen.

Stuttgart, 1843, pp. 1-258, with pls. i-xxiii.

Pp. 234-244, with pl. xxiii, are devoted to the fossil fishes of the Lebanon. The genera *Pycnosternix* and *Isodus* are characterized.

—— 1850 A

Ueber die Wirbelsäule fossilen Ganoiden.

Sitzungsber. k. Akad. Wissensch. Wien., math.-phys. Cl., v, pp. 358-368, with 4 text figs.

Heckel, Joh. Jakob—Cont'd. 1854 A

Ueber den Bau und die Eintheilung der Pycnodonten, nebst kurzer Beschreibung einiger neuen Arten derselben.

Sitzungsber. k. Akad. Wissensch. Wien., math.-phys. Cl., xii, pp. 433–468.

—— 1856 A

Beiträge zur Kenntniss der fossilen Fische Oesterreichs.

Denkschr. k. Akad. Wissensch. Wien, math.-naturw. Cl., xi, pp. 187–274, with pls. i–xv.

Also issued separately with pp. 1–88.

Helm, F. 1891 A

On the affinities of *Hesperornis*.

Nature, xliii, p. 368.

Hemstedt, R. 1870 A

Ueber einigen Besonderheiten der Schädelknochen von *Lepus* und über das knöcherne Gehörorgan desselben Genus.

Archiv f. Anat., Physiol. u. wissensch. Med., Jahrg. 1870, pp. 437–453, pl. xi.

Hensel, Reinhold. 1859 A

Ueber einen fossilen Muntjac aus Schlesien.

Zeitschr. deutsch. geol. Gesellsch. xi, pp. 251–279, with pls. x–xii.

—— 1860 A

Ueber *Hipparion mediterraneum*.

Abhandl. k.-p. Akad. Wissensch. Berlin, 1860. pp. 27–121, with pls. i–iv.

—— 1875 A

Zur Kenntniss der Zahnformel für die Gattung *Sus*.

Nova Acta k. Leop.-Carol. Akad., xxxvii, No. 5, pp. 1–40, with pl. xxvi.

Hertwig, O. 1874 A

Über Bau und Entwicklung der Placoidschuppen und der Zähne der Selachier.

Jenaische Zeitschr. Naturwiss. viii, pp. 331–404, with pls. xii–xiii.

—— 1876 A

Über das Hautskelet der Fische.

Morpholog. Jahrbuch, ii, pp. 328–395, with pls. xxiii–xxviii.

Describes the dermal skeleton of the Siluroids and of *Acipenseridæ*.

—— 1879 A

Ueber das Hautskelet der Fische.

Morpholog. Jahrbuch, v, pp. 1–21, with pls. i–iii.

Describes dermal skeleton of *Lepisosteidæ* and *Polypteridæ*.

Hertwig, O.—Continued. 1881 A

Ueber das Hautskelet der Fische. III. Das Hautskelet der *Pediculati*, der *Discoboli*, der Gattung *Diana*, der *Centriscidæ*, einiger Gattungen aus der Familie der *Triglidæ* und der Plectognathen.

Morpholog. Jahrbuch, vii, pp. 1–42, with pls. i–iv.

Hibbert, Samuel. 1836 A

On the fresh-water limestone of Burdiehouse, in the neighborhood of Edinburgh, belonging to the Carboniferous group of rocks, with supplementary notes on other fresh-water limestones.

Trans. Roy. Soc. Edinburgh, xiii, pp. 169–282, with pls. v–xii.

Hicks, L. E. 1873 A

Discovery of mastodon remains in Ohio.

Amer. Jour. Sci. (3), v., p. 79.

Higgins, E. T. 1867 A

On the otolites of fish, and their value as a test in verifying recent and fossil species.

Jour. Linn. Soc. Lond., ix, pp., 157–166.

Higley, W. K. 1886 A

A paper on *Elephas primigenius*.

Bull. Chicago Acad. Sci., i, No. x, pp. 123–127, with 1 pl.

Hilgard, Eugene W. 1860 A

Report on the geology and agriculture of Mississippi.

Pp. i–xiii, 1–391.

Printed by order of the legislature. Contains remarks on a few fossil vertebrates, and on page 389 a list of fossil teeth of fishes, by Dr. Wm. Spillman.

—— 1867 A

On the Tertiary formations of Mississippi and Alabama.

Amer. Jour. Sci. (2), xliii, pp. 29–41.

Contains mention of *Zeuglodon*.

Hilgendorf, F. 1866 A

Ueber das Gebiss der hasenartigen Nager.

Monatsber. k.-p. Akad. Wissensch. Berlin, 1865 (1866), p. 673.

Hill, F. C. 1881 A

The fossil *Dinocerata* in the E. M. Museum at Princeton, N. J.

Proc. Amer. Assoc. Adv. Sci., 29th meeting, Boston, 1880, pp. 524–527, with 1 woodcut.

An abstract of paper read.

—— 1886 A

On the mounting of fossils.

Amer. Naturalist, xx, pp. 353–359, with 8 woodcuts.

Hills, R. C. 1880 A

Note on the occurrence of fossils in the Triassic and Jurassic beds near San Miguel, in Colorado.

Amer. Jour. Sci., (3), xix, p. 490.

Hitchcock, Charles H. 1855 A

Impressions (chiefly tracks) on alluvial clay in Hadley, Mass.

Amer. Jour. Sci., (2), xix, pp. 391–396.

—— 1865 A

Editorial notes.

In Edward Hitchcock's Supplement to the Ichnology of New England. (Hitchcock, E., 1858 A).

—— 1866 A

Description of a new reptilian bird from the Trias of Massachusetts.

Annals Lyc. Nat. Hist. New York, viii, pp. 301–302.

Description of tracks of *Tarsodactylus expansus*.

—— 1868 A

New American fishes from the Devonian.

Geol. Magazine (1), v, pp. 184–185, with 2 figs. in text.

Reports discovery of *Dinichthys herzeri* by Dr. Newberry.

—— 1868 B

New Carboniferous reptiles and fishes from Ohio, Kentucky, and Illinois.

Geol. Magazine (1), v, pp. 186–187.

Reports Prof. Newberry's descriptions of fishes as presented before A. A. A. S., 1867.

—— 1869 A

Note on the supposed fossil foot marks in Kansas.

Amer. Jour. Sci. (2), xlvii, pp. 132–133.

—— 1871 A

[Account and complete list of the *Ichnozoa* of the Connecticut Valley.]

Walling and Gray's Official Typographical Atlas of Massachusetts, pp. xx–xxi.

This account is part of a description of the geology of Massachusetts, and consists principally of a list of the fossil footmarks. This list is almost identical with the same author's list of 1889 (1889 B), with the exception of species published after 1871. I cite this paper, therefore, only in the cases of species, two or three in number, more particularly mentioned. Few new facts are presented.

—— 1873 A

Footprints in the rocks.

Pop. Sci. Monthly, iii, pp. 428–441, with 7 text-figs.

Hitchcock, Charles H.—Cont'd. 1889 A

[Remarks on A. Wanner's paper on The discovery of fossil tracks in the Triassic of York County, Pa.]

Proc. Amer. Assoc. Adv. Sci., 37th meeting, Cleveland, 1888, p. 186.

—— 1889 B

Recent progress in ichnology.

Proc. Boston Soc. Nat. History, xxiv, pp. 117–127.

Contains a list of the American Triassic species of *Ichnozoa* and descriptions of new forms. This list is identical with one published by the same author in 1871 (Hitchcock, C. H., 1871 A), with the exception of a few species published after the issue of the latter paper.

Hitchcock, Edward. 1836 A

Ornithichnology. Description of the footmarks of birds (*Ornithichnites*) on New Red sandstone in Massachusetts.

Amer. Jour. Sci., xxix, pp. 307–340, with a folded plate of 24 figs.

—— 1837 A

Ornithichnites in Connecticut.

Amer. Jour. Sci., xxxi, pp. 174–175.

—— 1837 B

Fossil footsteps in sandstone and graywacke.

Amer. Jour. Sci., (1), xxxii, pp. 174–176.

—— 1841 A

Final report on the geology of Massachusetts.

Vol. ii, pp. 301–831, with pls. xv–li. Northampton, 1841.

Pp. 458–525 are devoted to the descriptions of fossil fishes and footprints, and these are illustrated on pls. xxix–li.

—— 1843 A

Description of five new species of fossil footmarks, from the Red Sandstone of the valley of Connecticut River.

Reports of the 1st, 2d, and 3d meetings of the Assoc. of Amer. Geol. and Naturalists, pp. 254–264, with pl. xi.

—— 1844 A

Report on ichnolithology, or fossil footmarks, with a description of several new species, and the coprolites of birds, from the valley of the Connecticut River, and of a supposed footmark from the valley of the Hudson River.

Amer. Jour. Sci., xlvii, pp. 292–322, with pls. iii–iv.

Abstract in Neues Jahrb. Min., 1845, pp. 753–757.

Hitchcock, Edward—Continued. 1844 B

Rejoinder to the preceding article of Dr. Deane.

Amer. Jour. Sci., xlvii, pp. 390–399.

A reply to Deane, J., 1844 B. See Deane, J., 1844 C.

—— 1845 A

Extract of a letter from Prof. E. Hitchcock, embracing miscellaneous remarks upon fossil footmarks, the Lincolnite, etc., and a letter from Prof. Richard Owen, on the great birds' nests of New Holland.

Amer. Jour. Sci., xlviii, pp. 61–65.

—— 1845 B

An attempt to name, classify, and describe the animals that made the fossil footmarks of New England.

Proc. 6th annual meeting Assoc. Amer. Geologists and Naturalists, New Haven, Conn., April, 1845, pp. 23–25.

In this paper the footmarks formerly described under the general terms *Ornithoidichnites* and *Sauroidichnites* are assigned generic names.

—— 1847 A

Description of two new species of fossil footmarks found in Massachusetts and Connecticut, or of the animals that made them.

Amer. Jour. Sci. (2), iv, pp. 46–57, with 3 text figs.

—— 1848 A

An attempt to discriminate and describe the animals that made the fossil footmarks of the United States, and especially of New England.

Mem. Amer. Acad. Arts and Sci. (2), iii, pp. 129–256, pls. 1–24.

—— 1855 A

Shark remains from the Coal formation of Illinois, and bones and tracks from the Connecticut River sandstone.

Amer. Jour. Sci. (2), xx, pp. 416–417.

—— 1856 A

On a new fossil fish and new fossil footmarks. I. History of the discovery and general character of the jaw of a new family of fossil fishes. II. Description of a new and remarkable species of fossil footmarks from the sandstone of Turner's Falls, in the Connecticut Valley.

Amer. Jour. Sci. (2), xxi, pp. 96–100, with 1 fig. in the text.

Hitchcock, Edward—Continued. 1856 B

Account of the discovery of the fossil jaw of an extinct family of sharks from the Coal formation.

Proc. Amer. Assoc. Adv. Sci., 9th meeting, 1855, Washington, D. C., pp. 229–230.

A description and figure, without genus and species, of *Edestus minor* Newb., found in Parke County, Ind.

—— 1858 A

Ichnology of New England. A report on the sandstone of the Connecticut Valley, especially its fossil footmarks.

Boston, 1858. 4to, 220 pp.; with 60 quarto pls.

—— 1861 A

Remarks upon certain points in ichnology.

Proc. Amer. Assoc. Adv. Sci., 14th meeting, Newport, 1860, pp. 144–156, with 4 figs. in the text.

—— 1863 A

New facts and conclusions respecting the fossil footmarks of the Connecticut Valley.

Amer. Jour. Sci. (2), xxxvi, pp. 46–57.

—— 1863 B

Supplement to the ichnology of New England.

Proc. Amer. Acad. Arts and Sci., vi, pp. 85–92.

In this paper a number of species formerly described is rejected or recorded as doubtful; two species are mentioned as new but not described; notes are given on other species, and there is a general discussion of fossil tracks.

—— 1865 A

Supplement to the ichnology of New England. A report to the government of Massachusetts in 1863.

Boston, 1865. 4to; pp. i–x, 1–96, pls. i–xx.

Edited by his son, C. H. Hitchcock. Appendix A (pp. 39, 40) is entitled "Bones of *Megadactylus polyzelus*;" Appendix B (pp. 40–93) consists of a descriptive catalogue of the Hitchcock ichnological cabinet at Amherst College.

—— 1872 A

Discovery of a tooth of a mastodon in Massachusetts.

Amer. Jour. Sci. (3), iii, p. 146.

—— 1885 A

[Letter to editor of Science announcing discovery of a mastodon's skeleton near Geneva, N. Y.]

Science, vi, p. 450.

Hitchcock, Fanny R. M. 1887 A

On the homologies of *Edestus*.

Amer. Naturalist, xxi, pp. 847–848.

Hitchcock, Fanny R. M.—C't'd. 1888 A
On the homologies of *Edestus*.
Proc. Amer. Assoc. Adv. Sci., 36th meeting, New York, 1887, pp. 260-261.
Abstract of paper presented.

—— 1888 B
Further notes on the osteology of the shad (*Alosa sapidissima*).
Annals N. Y. Acad. Sci., iv, pp. 225-228, with text fig.

Hodson, William B. 1846 A
Memoir on the *Megatherium* and other extinct gigantic quadrupeds of the coast of Georgia, with observations on its geologic features.
Pp. 1-47, with 1 pl. and 2 maps. New York, 1846.
Besides the matter contributed by Hodson this memoir contains a "Memorandum" by Dr. Jos. Habersham (pp. 25-30) and "Observations" by J. Hamilton Couper (pp. 31-47).

Hoernes, R. 1875 A
Vorlage von Wirbelthierresten aus den Kohlenablagerungen von Trifail in Steiermark.
Verhandl. k. k. geol. Reichsanstalt, 1875-1876, pp. 310-313.

—— 1876 A
Anthracotherium magnum Cuv aus den Kohlenablagerungen von Trifail.
Jahrbuch k. k. geol. Reichsanstalt, xxvi, pp. 209-242, with pl. xv.
Contains numerous references to the literature of this subject up to that time.

—— 1877 A
Zur Kenntniss der *Anthracotherium dalmatinum* Meyer.
Verhandl. k. k. geol. Reichsanstalt, 1875-1876, No. 15, pp. 363-366.

—— 1892 A
Zur Kenntniss der Milchbezahnung der Gattung *Entelodon* Aym.
Sitzungsber Akad. Wissensch. Wien, ci, pp. 17-24, with 1 pl.

Hoffmann, C. K. 1874 A
Amphibien.
Bronn's Klassen und Ordnungen des Thierreichs, vi, pp. 1-88, pls. i-xiv.
This portion of Dr. Hoffmann's work is devoted to the osteology of the *Batrachia*. In it is found a list of 78 works on this subject.

—— 1876 A
Beiträge zur Kenntniss des Beckens der Amphibien und Reptilien.
Niederländisches Archiv Zoologie, iii, pp. 143-194, pls. x, xi, and 15 woodcuts in the text.

Hoffmann, C. K.—Continued. 1878 A
Beiträge zur Anatomie der Wirbelthiere.
Niederländisches Archiv Zoologie, iv, pp. 112-248, pls. ix-xiii.
Discusses the structure of the carpus and tarsus of reptiles and amphibians, the integument and dermal skeleton of *Testudinata*, morphology of ribs, etc.

—— 1879 A
Beiträge zur vergleichenden Anatomie der Wirbelthiere. X; Uber das Vorkommen von Halsrippen bei den Schildkröten; XI, Uber das Verhältniss des Atlas und des Epistropheus bei den Schildkröten; XII, Zur Morphologie des Schultergürtels und des Brustbeins bei Reptilien, Vögeln, Säugethieren und dem Menschen.
Niederländisches Archiv Zoologie, v, pp. 19-114, with pls. ii-ix.

—— 1890 A
Schildkröten.
Bronn's Klassen und Ordnungen des Thierreichs, vi, Abtheil. iii, pp. 1-442, with pls. i-xlviii.
Pp. 1-73 are devoted to the osteology of the *Testudinata*. On pp. 1-3 is found a list of the literature of the subject.

—— 1890 B
Eidechsen und Wassereidechsen (*Saurii* und *Hydrosauria*).
Bronn's Klassen und Ordnungen, vi, Abth. iii, pp. 443-1399, with pls. xlix-cvii.
Pp. 443-610 and pls. xlix-lxxi are devoted to the osteology of this group. Pp. 1299-1329 are devoted to the palæontology of the *Reptilia*.

—— 1890 C
Schlangen und Entwicklungsgeschichte der Reptilien.
Bronn's Klassen und Ordnungen des Thierreichs, vi, pt. 3, pp. 1401-2089, with pls. cviii-clxx.
The description of the skeleton occupies pp. 1420-1448 and pls. cx-cxvi.

Holder, Joseph B. 1883 A
The Atlantic right whales: A contribution embracing an examination of (1) The exterior characters and osteology of a cisarctic right whale—male; (2) The exterior characters of a cisarctic right whale—female; (3) The osteology of a cisarctic right whale—sex not known. To which is added a concise résumé of historical mention relating to the present and allied species.
Bulletin Amer. Mus. Nat. Hist., i, pp. 99-138, with pls. x-xiii.

Holland, W. J. 1900 A

The vertebral formula in *Diplodocus* Marsh.

Science (2), xi, pp. 816–818.

Hollard, Henri. 1853 A

Monographie de la famille des Balistides.

Ann. Sci. Naturelles (3), Zool., xx, pp. 71–114, with pls. i–iii.

—— 1854 A

Monographie des Balistides. Part 2.

Ann. Sci. Naturelles (4), Zool., i, pp. 39–72; 303–339.

This monograph is continued in vol. ii, pp. 321–366, 1854, and in vol. iv, pp. 5–27, 1855.

—— 1857 A

Étude sur les Gymnodontes, et en particulier sur leur ostéologie et sur les indications qu'elle peut fournier pour leur classification.

Annales des Sci. Naturelles (4), Zool., viii, pp. 275–328.

—— 1860 A

Mémoire sur le squelette des poissons plectognathes étudié au point de vue des caractères qu'il peut fournir pour pour la classification.

Annales Sci. Naturelles (4), Zool., xiii, pp. 5–46, pls. ii, iii.

Hollick, Arthur. 1894 A

[Remarks on *Spiraxis* Newb.]

Trans. N. Y. Acad. Sci., xiii, pp. 118–119.

Holmes, F. S. 1849 A

Notes on the geology of Charleston, S. C.

Amer. Jour. Sci., vii, pp. 187–201.

—— 1850 A

[Remarks on paper by R. W. Gibbes concerning fossil *Equus* from Eocene of South Carolina.]

Proc. Amer. Assoc. Adv. Sci., 3d meeting, Charleston, S. C., 1850, pp. 68–69.

Remarks on Gibbes, R. W. 1850 C.

—— 1850 B

Observations on the geology of Ashley River, South Carolina.

Proc. Amer. Assoc. Adv. Sci., 3d meeting, Charleston, S. C., 1850, pp. 201–204.

—— 1858 A

Remains of domestic animals among post-Pliocene fossils in South Carolina.

16 pp., 8vo, Charleston, 1858.

This paper contains extract from a paper by Dr. Leidy and a letter by Professor Agassiz. In this letter Agassiz expresses the belief that "horses, sheep, bulls, and hogs not distinguishable at present from the domesticated species" existed in America before the advent of white men.

—— 1858 B

Remains of domestic animals among post-Pliocene fossils in South Carolina.

Amer. Jour. Sci. (2), xxv, pp. 442–443.

—— 1859 A

[Remarks of Prof. F. S. Holmes on fossils from post-Pliocene of South Carolina, including a letter from Prof. L. Agassiz.]

Proc. Acad. Nat. Sci. Phila., 1859, pp. 177–186.

Holmes, N. 1857 A

[Remarks on contemporaneity of man and the mastodon.]

Trans. Acad. Sci. St. Louis, i, p. 117.

Home, Everard. 1819 A

An account of the fossil skeleton of the *Proteosaurus*.

Philos. Trans. Roy. Soc. Lond., cix, pl. 209–211.

This paper was preceded by others of the same author in the volumes for 1814, 1816, but in these papers no name was applied to the remains.

—— 1819 B

Reasons for giving the name *Proteosaurus* to the fossil skeleton which has been described.

Philos. Trans. Roy. Soc. Lond., cix, pp. 212–216, with pl. xv.

Honeyman, D. 1874 A

Skeleton of a whale in the Quaternary of New Brunswick.

Amer. Jour. Sci. (3), vii, p. 597.

Supposed to be *Beluga vermontana*.

—— 1874 B

On the Quartenary containing the New Brunswick fossil cetacean.

Amer. Jour. Sci. (3), viii, p. 219.

Hopkins, William. 1855 A

Brief outline or general description of a remarkable fossil, not known to be described, and by some supposed to be an ichthyodorulite.

Proc. Amer. Assoc. Adv. Sci., 8th meeting, Washington, D. C., 1854, pp. 287–290, with 2 woodcuts.

Horner, W. E. 1840 A

Note of the remains of the mastodon, and some other extinct animals collected together in St. Louis, Mo.

Proc. Amer. Philos. Soc., i, pp. 279–282.

This note refers to the collection of Doctor Koch at St. Louis.

Horner, W. E.—Continued. 1841 A

Note on the remains of the mastodon, and some other extinct animals collected together in St. Louis, Mo.

Amer. Jour. Sci., xl, pp. 56-59. (Extract from Proc. Amer. Philos. Soc.)

An investigation of Koch's collection.

—— 1841 B

Remarks on the dental system of the mastodon, with an account of some lower jaws in Mr. Koch's collection, St. Louis, Mo., where there is a solitary tusk on the right side.

Proc. Amer. Philos. Soc., i, pp. 307-308.

This is an abstract of "Horner, W. E., 1842 A."

—— 1841 C

On the dental system of the mastodon.

Proc. Amer. Philos. Soc., ii, pp. 6-7.

A note of correction of the preceding paper.

—— 1842 A

Remarks on the dental system of the mastodon, with an account of some lower jaws in Mr. Koch's collection, St. Louis, Mo., where there is a solitary tusk on the right side.

Trans. Amer. Philos. Soc., viii, pp. 53-59.

Horner, W. E., and **Hays**, Isaac. 1842 A

Description of an entire head, and various other bones of the mastodon.

Trans. Amer. Philos. Soc., viii, pp. 37-48, pls. i-iv.

Hovey, Edmund O. 1874 A

The largest fossil elephant tooth yet described.

Proc. Amer. Assoc. Adv. Sci., 22d meeting, Portland, 1873, p. 112.

Abstract of paper presented.

—— 1900 A

The geological and palæontological collections in the American Museum of Natural History.

Science (2), xii, pp. 757-760.

Howes, G. B. 1887 A

On the skeleton and affinities of the paired fins of *Ceratodus*, with observations upon those of *Elasmobranchii*.

Proc. Zool. Soc. Lond., 1887, pp. 3-26, with pls. i-iii.

—— 1887 B

Morphology of the mammalian coracoid.

Jour. Anat. Physiol., xxi, pp. 190-198, with pl. viii.

Howes, G. B.—Continued. 1890 A

Observations on the pectoral fin skeleton of the living batoid fishes, and of the extinct genus *Squaloraja*, with especial reference to the affinities of the same.

Proc. Zool. Soc. Lond., 1890, pp. 675-688, with 10 figs. in the text.

—— 1893 A

On the mammalian pelvis, with especial reference to the young of *Ornithorhynchus anatinus*.

Jour. Anat. and Physiol., xxvii, pp. 543-556, with pl. xxviii.

—— 1896 A

On the mammalian hyoid, with especial reference to that of *Lepus*, *Hyrax*, and *Cholæpus*.

Jour. Anat. and Physiol., xxx, pp. 513-526, with pl. viii.

—— See also **Hancock** and **Howes**.

Howes, G. B., and **Davies**, A. M. 1888 A

Observations upon the morphology and genesis of supernumerary phalanges, with especial reference to those of the amphibia.

Proc. Zool. Soc., Lond., 1888, pp. 495-511, with pls. xxiv, xxv.

Howes, G. B., and **Harrison**, J. 1893 A

On the skeleton and teeth of the Australian dugong.

Report Brit. Assoc. Adv. Sci., 62d meeting, Edinburgh, 1892, p. 790.

Howes, G. B., and **Ridewood**, W. 1888 A

On the carpus and tarsus of the *Anura*.

Proc. Zool. Soc. Lond., 1888, pp. 41 1-182, with pls. vii-ix.

Howes, G. B., and **Swinnerton**, H. H. 1900 A

On the development of the skeleton of the Tuatera, *Sphenodon* (*Hatteria*) *punctatus*.

Proc. Zool. Soc. Lond., 1900, pp. 516-517.

An abstract of a paper read before the society.

Howorth, H. H. 1870 A

The extinction of the mammoth.

Report of the Brit. Assoc. Adv. Sci., 39th meeting, Exeter, 1869, pp. 90-91.

Abstract of paper presented.

—— 1881 A

Climate of Siberia in the era of the mammoth.

Amer. Jour. Sci. (3), xxi, p. 148.

Extracts form Howorth's paper in the Geological Magazine for December, 1880.

Howorth, H. H.—Continued. 1881 B

The sudden extinction of the mammoth.

Geol. Magazine (2), viii, pp. 309-315.

—— 1892 A

Did the mammoth live before, during, or after the deposition of the glacial drift.

Geol. Magazine (3), ix, pp. 250-258; 396-405.

See Jukes-Brown, vol. ix, p. 477.

—— 1893 A

The true horizon of the mammoth.

Geol. Magazine (3), x, pp. 20-27; 161-163; 353-355.

—— 1894 A

The mammoth age was contemporary with the age of great glaciers.

Geol. Magazine (4), i, pp. 161-167.

Hoy, P. R. 1871 A

Dr. Koch's *Missourium*.

Amer. Naturalist, v, pp. 147-148.

Hubrecht, A. A. W. 1877 A

Beitrag zur Kenntniss des Kopfskelets der Holocephalen.

Niederländisches Archiv fur Zoologie, iii, pp. 255-276, with pl. xvii.

See also Morphologisches Jahrbuch, iii.

—— 1878 A

Pisces: Fische.

Bronn's Klassen und Ordnungen, vi, Abth. i, pp. 1-86, with pls. i-xii.

Of this work, pp. 1-48, pls. i-vii, appeared in 1876; pp. 49-80, pls. viii-x, in 1878; pp. 81-86, in 1885. Pp. 21-86 are devoted to a consideration of the anatomy of the elasmobranchs.

—— 1896 A

Die Keimblase von *Tarsius*, ein Hilfsmittel zur schärferen Definition gewisser Säugethierordnungen.

Festschrift zum 70sten Geburtstage von Carl Gegenbaur, ii, pp. 149-178, with pl. i, and 15 figs. in the text.

Compares *Tarsius* with *Anaptomorphus*.

Huene, Friedrich v. 1900 A

Devonische Fischreste aus der Eifel.

Neues Jahrb. Min., Geol. und Pal., 1900, i, Abhandl., pp. 64-66, with 2 text figs.

Records finding of *Dinichthys* and *Rhynchodus*.

Hulke, J. W. 1879 A

Note (3d) on (*Eucamerotus* Hulke) *Ornithopsis* H. G. Seeley=*Bothriospondylus* Owen=*Chondrosteosaurus magnus* Owen.

Quart. Jour. Geol. Soc., xxxv, pp. 752-762, with 4 text figs.

Hulke, J. W.—Continued. 1879 B

Note on *Poikilopleuron bucklandi* of Eudes Deslongchamps (père) identifying it with *Megalosaurus bucklandi*.

Quart. Jour. Geol. Soc. Lond., xxxv, pp. 233-238, with pl. xii.

—— 1880 A

Supplementary note on the vertebræ of *Ornithopsis*, Seeley=*Eucamerotus*, Hulke.

Quart. Jour. Geol. Soc., xxxvi, pp. 31-34, with pls. iii, iv.

—— 1882 A

Note on the os pubis and ischium of *Ornithópsis eucamerotus*.

Quart. Jour. Geol. Soc., xxxviii, pp. 372-376, with pl. xiv.

—— 1883 A

The anniversary address of the President.

Quart. Jour. Geol. Soc., xxxix, Proceedings, pp. 38-65, with 18 figs. in the text.

Discusses the structure of various extinct reptiles, *Enaliosauria* and *Dinosauria*, especially the structure of shoulder girdle and limbs.

—— 1883 B

An attempt at a complete osteology of *Hypsilophodon foxii*.

Philosoph. Trans. Roy. Soc. London, clxxiii, pp. 1035-1062, pls. lxxi-lxxxii.

—— 1884 A

The anniversary address of the President [of the Geol. Soc. Lond.].

Quart. Jour. Geol. Soc., vol. xl, Proceedings, pp. 37-57, with 8 text figs.

Discusses structure of certain *Dinosauria*, especially *Iguanodon*.

—— 1885 A

Note on the sternal apparatus in *Iguanodon*.

Quart. Jour. Geol. Soc., xli, pp. 473-475, with pl. xiv.

—— 1888 A

Contribution to the skeletal anatomy of the *Mesosuchia*, based on fossil remains from the clays near Peterborough in the collection of A. Leeds, esq.

Proc. Zool. Soc. Lond., 1888, pp. 417-442, with pls. xviii, xix.

—— 1892 A

On the shoulder girdle in *Ichthyosauria* and *Sauropterygia*.

Proc. Roy. Soc. London, lii, pp. 233-255, with 9 figs. in the text.

Humbert, Alois. See **Pictet and Humbert.**

Humphry, G. M. 1866 A

On the homologies of the lower jaw, and the bones connecting it with the skull in birds, reptiles, and fishes.

Report Brit. Assoc. Adv. Sci., 35th meeting, Birmingham, 1865, pp. 87–89.

—— 1870 A

On the homological relations to one another of the mesial and lateral fins of osseous fishes.

Jour. Anat. and Physiol., v, pp. 58–66, pl. ii.

Humphreys, John. 1889 A

The suppression and specialization of teeth.

Proc. Birmingham Philos. Soc., vi, pp. 137–161.

See also **Windle and Humphreys**.

Hunt, J. G. 1874 A

[Report on food of the mastodon.]

Proc. Boston Soc. Nat. Hist., xvii, pp. 91–92.

Hunter, William. 1769 A

Observations on the bones, commonly supposed to be elephant's bones, which have been found near the river Ohio, in America.

Philos. Trans. Roy. Soc. Lond., 1768, lviii, pp. 34–45, with pl. iv.

Hurst, C. Herbert. 1893 A

The digits in a bird's wing: a study of the origin and multiplication of errors.

Natural Science, iii, pp. 275–281, with photographic reproduction of wing of *Archæopteryx*.

—— 1895 A

The structure and habits of *Archæopteryx*.

Natural Science, vi, pp. 112–122; 180–186; 244–248, with 2 pls. and 2 figs. in the text.

Hutchinson, H. N. 1893 A

Extinct monsters. A popular account of some of the larger forms of ancient animal life, with illustrations by J. Smit and others.

Pp. i–xxii, 1–270, with pls. i–xxvi and 58 text figs.

Reviewed in *Natural Science*, ii, pp. 135–143.

Huxley, Thomas H. 1858 A

On *Cephalaspis* and *Pteraspis*.

Quart. Jour. Geol. Soc. Lond., xiv, pp. 267–280, with pls. xiv, xv, showing the microscopical structure of the skeleton.

—— 1858 B

On a new species of *Plesiosaurus* from Street, near Glastonbury, with remarks on the structure of the atlas and axis vertebræ and of the cranium in that genus.

Quart. Jour. Geol. Soc. Lond., xiv, pp. 281–294.

—— 1858 C

Observations on the development of some parts of the skeleton of fishes.

1. On the development of the tail in Teleostean fishes.

2. On the development of the palatopterygoid arc and hyomandibular suspensorium in fishes.

Quart. Jour. Micros. Sci., vii, pp. 33–46.

—— 1859 A

Observations on the genus *Pteraspis*.

Report Brit. Assoc. Adv. Sci., 28th meeting, Leeds, 1858, pp. 82–83.

—— 1859 B

On the dermal armour of *Jacare* and *Caiman*, with notes on the specific and generic characters of recent *Crocodilia*.

Jour. Linn. Soc. Lond., iv, pp. 1-28.

—— 1859 C

On a new species of *Dicynodon* (*D. murrayi*) from near Colesberg, South Africa, and on the structure of the skull in the Dicynodonts.

Quart. Jour. Geol. Soc. Lond., xv, pp. 649–658, with pls. xxii, xxiii.

—— 1861 A

On *Pteraspis dunensis* (*Archæoteuthis dunensis*, Roemer).

Quart. Jour. Geol. Soc. Lond., xvii, pp. 163–166, with 2 figs. in the text.

—— 1861 B

Preliminary essay upon the systematic arrangement of the fishes of the Devonian epoch.

Mem. Geol. Surv. United Kingdom, decade 10, pp. 1–40; pls. 1–3.

—— 1861 C

Phaneropleuron andersoni.

Mem. Geol. Surv. United Kingdom, decade 10, pp. 47–49; pl. iii.

—— 1863 A

Description of *Anthracosaurus russelli*, a new labyrinthodont from the Lanarkshire coal field.

Quart. Jour. Geol. Soc. Lond., xix, pp. 56–68.

—— 1864 A

On the cetacean fossils termed "Ziphius," by Cuvier, with a notice of a new species (*Belemnoziphius compressus*) from the Red Crag.

Quart. Jour. Geol. Soc. Lond., xx, pp. 388–396, with pl. xix.

Huxley, Thomas H.—Cont'd. 1865 A

On the osteology of *Glyptodon*.

Philosoph. Trans. Roy. Soc. Lond., clv, pp. 31-70; pls. 4-9.

—— 1866 A

Illustrations of the structure of the Crossopterygian ganoids.

Mem. Geol. Surv. United Kingd., decade 12, pp. 3-45, with pls. ii-x.

—— 1867 A

On the classification of birds.

Proc. Zool. Soc. Lond., 1867, pp. 415-472, with 36 figs. in the text.

—— 1867 B

Description of vertebrate remains from the Jarrow colliery, part i.

Trans. Roy. Irish Acad., xxiv, pp. 353-369, with pls. xix-xxiii.

—— 1868 A

On the animals which are most nearly intermediate between birds and reptiles.

Proc. Roy. Soc. Lond., xvi, pp. 243-248.

Also in Ann. Mag. Nat. Hist. (4), i, 1868, pp. 220-224; Geol. Mag. (1), v, pp. 357-365.

—— 1869 A

Triassic *Dinosauria*.

Nature, i, pp. 23-24.

Discusses, among other genera, *Bathygnathus* and *Belodon*.

—— 1869 B

On the representatives of the malleus and the incus of the *Mammalia* in the other *Vertebrata*.

Proc. Zool. Soc. Lond., 1869, pp. 391-407, with 8 figs. in the text.

—— 1869 C

On *Hyperodapedon*.

Quart. Jour. Geol. Soc., Lond., xxv, pp. 138-152; 157-158, with 5 figs. in the text.

—— 1869 D

On the upper jaw of *Megalosaurus*.

Quart. Jour. Geol. Soc. Lond., xxv, pp. 311-314, with pl. xii.

—— 1870 A

On the progress of palæontology. Anniversary address delivered before the Geological Society.

Nature, i, pp. 437-443.

—— 1870 B

The anniversary address of the president [of the Geol. Soc. Lond.].

Quart. Jour. Geol. Soc., Lond., xxvi; Proceedings, pp. xxix-lxiv.

—— 1870 C

Further evidences of the affinity between the Dinosaurian reptiles and birds.

Quart. Jour. Geol. Soc. Lond., xxvi, pp. 12-31.

Huxley, Thomas H.—Cont'd. 1870 D

The classification and affinities of the *Dinosauria*.

Quart. Jour. Geol. Soc. Lond., xxvi, pp. 32-51, with pl. iii.

—— 1872 A

A manual of the anatomy of vertebrated animals.

Pp. 1-431, woodcuts 110. New York, D. Appleton & Co., 1872.

—— 1874 A

On the structure of the skull and of the heart of *Menobranchus lateralis*.

Proc. Zool. Soc. Lond., 1874, pp. 186-204, with pls. xxix-xxxii.

—— 1875 A

Note on the development of the columella auris in the *Amphibia*.

Report Brit. Assoc. Adv. Sci., 44th meeting, Belfast, 1874, pp. 141-142.

Abstract in Nature, vol. xi, 1874, p. 68.

—— 1875 B

On *Stagonolepis robertsoni*, and on the evolution of the *Crocodilia*.

Quart. Jour. Geol. Soc. Lond., xxxi, pp. 423-438, with pl. xix.

—— 1875 C

Amphibia.

Encyclop. Brit., ed. 9, i, pp. 750-771, with 26 figs. in the text.

—— 1876 A

On *Ceratodus forsteri*, with observations on the classification of fishes.

Proc. Zool. Soc. Lond., 1876, pp. 24-59, with 11 woodcuts in the text.

—— 1876 B

On the evidence as to the origin of existing vertebrate animals.

Nature, xiii, pp. 388-389, 410-412, 429-430, 467-469, 514-516; xiv, pp. 33-34.

Abstracts of 6 lectures delivered at the Royal School of Mines.

—— 1876 C

The direct evidence of evolution; (ii), the negative and favorable evidence.

Popular Sci. Monthly, lvi, pp. 207-223, 285-298, with illus.

—— 1880 A

On the cranial and dental characters of the *Canidæ*.

Proc. Zool. Soc. Lond., 1880, pp. 238-288, with 16 woodcuts in the text.

—— 1880 B

On the application of the laws of evolution to the arrangement of the *Vertebrata*, and more particularly of the *Mammalia*.

Proc. Zool. Soc. Lond., 1880, pp. 649-661.

Huxley, Thomas H.—Cont'd. 1883 A
On the oviducts of *Osmerus*, with remarks on the relations of the teleostean with the ganoid fishes.
Proc. Zool. Soc. Lond., 1883, pp. 131-139, with 2 woodcuts.

—— 1887 A
Further observations on *Hyperodapedon gordoni*.
Quart. Jour. Geol. Soc., xliii, pp. 675-694, with pls. xxvi, xxvii.

Hyrtl, Joseph. 1853 A
Ueber normale Quertheilung der Saurierwirbel.
Sitzungsber. Akad Wissensch. Wien, math.-nat. Cl., x, pp. 185-192.

—— 1854 A
Beitrag zur Anatomie von *Heterotis ehrenbergii* C. V.
Denkschr. k. Akad. Wissensch. Wien, math.-nat. Cl., viii, pp. 73-88, with pls. i-iii.
The writer makes comparisons of *Heterotis* with *Osteoglossum*.

Ihering, H. von. 1891 A
Sobre la distribution geográfica de los Creodontes.
Revista Argentina de Historia Natural, i, pp. 209-213.

—— 1891 B
Ueber die zoologisch-systematische Bedeutung der Gehörorgane der Teleostier.
Zeitschr. Wissensch. Zool., lii, pp. 477-514, with pl. xxxi.
See also Sitzungsbericht Gesellsch. naturf. Freunde Berlin, 1891, pp. 23-26.

Iwanzon, Nikolai. 1887 A
Der *Scaphirhynchus*. Vergleichend-anatomische Beschreibung.
Bull. Soc. Imp. des Naturalistes de Moscou (n. s.), i, pp. 1-41, with pls. i, ii.

Jaccard, Auguste. See **Pictet** and **Jaccard**.

Jackson, C. T. 1851 A
Description of five new species of fossil fishes.
Proc. Boston Soc. Nat. Hist., iv, pp. 138-142.
Describes *Palæoniscus albertii*, *P. brownii*, and *P. cairnsii;* the others unnamed.

—— 1851 B
Descriptions of the fossil fishes of the Albert coal mine.
Pp. 22-25 of "Report on the Albert coal mine," etc., Boston, 1851.
Plates not issued with the text and missing in the copy examined.

Jackson, J. B. S. 1845 A
On the fossil bones of *Mastodon giganteus* from marl pit in New Jersey.
Proc. Boston Soc. Nat. Hist., ii, pp. 60-62.

Jaeger, Georg Friedr. 1828 A
Ueber die fossile Reptilien welche in Württemberg aufgefunden worden sind.
Pp. i-vi, 1-48, with pls. i-vi. Stuttgart. 1828.

—— 1844 A
Ueber die Stellung und Deutung der Zähne des Wallrosses.
Müller's Archiv f. Anat., Physiol., etc., 1844, pp. 70-75.

—— 1851 A
Berichtigung einer Angabe Cuviers über einen Narwhalschädel des Stuttgartes Naturalienkabinets, an welchen beide Stosszähne aus den Zahnhöhlen hervorragen sollen.
Jahreshefte Vereins vaterl. Naturkunde Württembergs, vii, pp. 24-32, with 2 figs. on pl. i.

—— 1857 A
Bemerkungen über die Veränderungen der Zähne von Säugethieren im Lauf ihrer Entwicklung, namentlich (A) bei dem Narwhal (*Monodon monoceros*) und (B) dem Cachalot (*Physeter macrocephalus*).
Bull. Soc. Imp. Naturalistes Moscou, xxx, pt. ii, pp. 571-580, with 1 text fig.

Jaekel, O. 1884 A
Die Selachier aus dem oberen Muschelkalk Lothringens.
Abhandl. geol. Specialkarte von Elsass-Lothringen, iii, pp. 275-332, with pls. vii-x.

—— 1890 A
Ueber die systematische Stellung und über fossile Reste der Gattung *Pristrophorus*.
Zeitschr. deutsch. geol. Gesellsch., xlii, pp. 86-120, with pls. ii-v, and 7 figs. in the text.
See also Jaekel, O., in Archiv. für Naturgeschichte, lvii, Bd. 1, pp. 15-48.

—— 1890 B
Ueber *Phaneropleuron* und *Hemictenodus*, n. g.
Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1890, pp. 1-8, with 2 figs. in the text.

—— 1890 C
Ueber die Kiemenstellung und die Systematik der Selachier.
Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1890, pp. 47-57, with 3 figs. in the text.

—— 1890 D
Bemerkungen über Flossenstacheln oder Ichthyodoruliten im Allgemeinen.
Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1890, pp. 119-131, with 3 figs. in the text.

Jaekel, O.—Continued. 1891 A

Ueber *Coccosteus.*

Zeitschr. deutsch. geol. Gesellsch., xliii, pp. 773–774.

—— 1891 B

Ueber *Menaspis armata* Ewald.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1891, pp. 115–131.

Discusses, among other matters, the systematic position of the Elasmobranchs.

—— 1891 C

Referate über die in den letzten Jahren erschienenen Arbeiten über Pleuracanthiden.

Neues Jahrbuch Mineralogie, etc., 1891, ii, pt. iii, pp. 161–170.

Herein are included reviews of a number of writers on the genera *Pleuracanthus*, *Xenacanthus*, and *Orthacanthus.* These are Chas. Brongniart, L. Doederlein, E. Koken, and Anton Fritsch.

—— 1891 D

Ueber mikroskopische Untersuchungen im Gebiet der Palæontologie.

Neues Jahrbuch Mineralogie, etc., 1891, i, Abhandl., pp. 178–196.

—— 1892 A

Ueber *Cladodus* und seine Bedeutung für die Phylogenie der Extremitäten.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1892, pp. 80–92.

—— 1893 A

Ueber die Ruderorgane der Placodermen.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1893, pp. 178–181.

—— 1893 B

[Review of Dr. J. S. Newberry's "The Palæozoic fishes of North America."]

Neues Jahrbuch Mineral., etc., 1893, i, pp. 174–177.

—— 1894 A

Die eocänen Selachier vom Monte Bolca. Ein Beitrag zur Morphogenie der Wirbelthiere.

Berlin, 1894, with 8 pls. and 39 text figs., pp. 1–176, 4 to.

—— 1894 B

Ueber sogenannten Faltenzähne und complicirtere Zahnbildungen überhaupt.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1894, pp. 146–153.

—— 1895 A

Organisation der Pleuracanthiden.

Sitz.-Ber. Gesellsch. naturforsch. Freunde, Berlin, 1895, pp. 69–85, with 2 figs. in the text.

Jaekel, O.—Continued. 1895 B

Ueber eine neue Gebissform fossiler Selachier.

Sitz.-Ber. Gesellsh. naturforsch. Freunde Berlin, 1895, pp. 200–202.

Refers to the dentition of *Janassa* and *Petalodus.*

—— 1896 A

Ueber die Körperform und Hautbedeckung von Stegocephalen.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1896, pp. 1–8.

—— 1896 B

Die Stammform der Wirbelthiere.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1896, pp. 107–129.

—— 1898 A

Ueber die verschiedenen Rochentypen.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1898, pp. 44–53.

—— 1898 B

Ueber *Hybodus.*

Sitz.-Ber. Gesellsch. naturforsch. Freunde, 1898, pp. 135–146, with 3 figs. in the text.

—— 1898 C

Verzeichniss der Selachier des Mainzer Oligocäns.

Sitz.-Ber. Gesellsch. naturforsch. Freunde Berlin, 1898, pp. 161–169.

—— 1899 A

Ueber die Organisation der Petalodonten.

Zeitschr. deutsch. geol. Gesellsch. li, pp. 258–296, with pls. xiv, xv, and 7 text figs.

—— 1899 B

Ueber die Zusammensetzung des Kiefers und Schultergürtels von *Acanthodes.*

Zeitschr. deutsch. geol. Gesellsch., li, Protokolle, pp. 56–60, with 2 text figs.

For more extended paper see Verhandl. deutsch. zool. Gesellsch., 1899, pp. 249–258, with 2 text figs.

—— 1900 A

Ueber die Reste von Edestiden und die neue Gattung *Helicoprion.*

Neues Jahrb. Min., 1900, ii, 144–148.

A review of Karpinsky, A. 1899 A.

James, Joseph F. 1891 A

The Biological Society of Washington.

Amer. Naturalist, xxv, pp. 298–299.

Contains report of remarks by Profs. H. F. Osborne and O. C. Marsh on Cretaceous mammals.

Jefferson, Thomas. 1799 A

A memoir on the discovery of certain bones of a quadruped of the clawed kind in the western parts of Virginia.

Trans. Amer. Philos. Society, iv, pp. 246-260.

The first account of the bones of *Megalonyx*.

This work is said by C. G. Giebel to have been issued in 1797.

Jeffries, J. A. 1881 A

On the fingers of birds.

Bull. Nuttall Ornithological Club, vi, pp. 6-11.

—— 1882 A

On the claws and spurs on birds' wings.

Proc. Bost. Soc. Nat. Hist., xxi, pp. 301-306.

—— 1883 A

Sternal processes in *Gallinæ*.

Science, ii, p. 622.

—— 1883 B

Osteology of the cormorant.

Science, ii, p. 739.

—— 1884 A

Osteology of the cormorant.

Science, iii, p. 59.

Johnston, Christopher. 1859 A

Note on Odontology.

Amer. Jour. Dental Science, ix, pp. 337-343.

Gives the name *Astrodon* to certain teeth found by him at Bladensburg, Maryland. No description is furnished.

Jordan, D. S. 1891 A

Relations of temperature to vertebræ among fishes.

Proc. U. S. Nat. Mus., xiv, pp. 107-120.

Jordan D. S., and **Evermann**, B. W. 1896 A

The fishes of North and Middle America. A descriptive catalogue of the species of fish-like vertebrates found in the waters of North America, north of the Isthmus of Panama.

Washington: Government Printing Office, 1896, pt. i, pp. i-lx, 1-1240.

Bull. U. S. Nat. Mus. No. 47.

—— —— 1898 A

The fishes of North America. A descriptive catalogue of the species of fish-like vertebrates found in the waters of North America, north of the Isthmus of Panama.

Part ii, pp. i-xxx, 1241-2183; part iii, pp. i-xxiv, 2184-3136.

—— 1900 A

The fishes of North and Middle America, etc.

Part iv, pp. i-ci, 3137-3313, with pls. i-cccxcii.

Jourdan, —— 1861 A

Description de restes fossiles de deux grands mammifères constituant le genre *Rhizoprion* (ordre des cétacés, groupe des Delphinoïdes) et le genre *Dinocyon* (ordre des carnassiers), famille des canides.

Ann. Sci. Naturelles (4), xvi, pp. 367-374, pl. x.

Karpinsky, A. 1899 A

Ueber die Reste von Edestiden und die neue Gattung *Helicoprion*.

Verhandl. k. russ. mineralog. Gesellsch., St. Petersburg (2), xxxvi, No. 2.

In Russian; quoted from Jaekel, 1900 A.

Kaup, J. 1832 A

Ueber zwey Fragmente eines Unterkiefers von *Mastodon angustidens* Cuv., nach welchen diese Art in die Gattung *Tetracaulodon* gehört.

Oken's Isis, xxv, cols. 627-630.

—— 1832 B

Ueber *Rhinoceros incisivus* Cuv., und eine neue Art, *Rhinoceros schleiermacheri*.

Oken's Isis, 1832, cols. 898-904.

Establishes genus *Aceratherium*.

—— 1833 A

[Letter addressed to von Leonhard.]

Neues Jahrbuch Mineral, etc., 1833, p. 327.

Establishes the genus *Hippotherium*, with *Equus gracilis* as type.

—— 1835 A

Die zwei urweltlichen pferdeartigen Thiere welche im tertiären Sande bei Eppelsheim gefunden werden, bilden eine eigene Unter-Abtheilung der Gattung Pferd, welche in der Zahl der Fingergliede den Uebergang zur Gattung *Palæotherium* macht und zwischen diese und Pferd zu stellen ist.

Nova Acta Caes. Leop.-Carol. Akad. Naturforsch., xvii, pp. 173-182, with pl. xii B.

—— 1843 A

Bemerkungen über die drei Arten *Mastodon* und die drei Arten *Tetracaulodon* des Hon. Isaak Hays.

Archiv. Naturgesch., ix, i, pp. 168-175.

See Hays, I., Proc. Amer. Phil. Soc., 1843, vol. ii, pp. 264-266.

Kehner, F. A. 1876 A

Zur Phylogenie des Beckens.

Verhandl. des naturhist.-medicin. Vereins zu Heidelberg, v, pp. 346-359; pls. vii, viii.

Kehrer, Gustav. 1886 A

Beiträge zur Kenntniss des Carpus und Tarsus der Amphibien, Reptilien und Säuger.

Berichte naturforsch. Gesellsch. zu Freiberg, Berichte i, pp. 73-88, with pl. iv.

Kersten, Hermann. 1821 A

Capitis *Trichechi rosmari* descriptio osteologica. Dissertatio inauguralis.

Berolini, 8 vo., pp. 5-24, with pls. i-iii.

Keyes, Charles R. 1888 A

On the fauna of the lower Coal measures of central Iowa.

Proc. Acad. Nat. Sci. Phila., 1888, pp. 222-246, with pl. xii.

Notes occurrence of *Petrodus occidentalis* and an unidentified species of *Diplodus*.

—— 1891 A

Fossil faunas in central Iowa.

Proc. Acad. Nat. Sci. Phila., 1891, pp. 242-265.

Notes occurrence of *Thrinacodus duplicatus*? and *Deltodus intermedius*.

—— 1894 A

Palæontology of Missouri (part ii).

Missouri Geol. Survey, v, pp. 1-266, with pls. xxxiii-lvi.

The vertebrates are catalogued in chapter xv, pp. 229-239. The synonomy is given, but no descriptions or figures, and no species are mentioned, except the fishes. A list of the fossil vertebrates of Missouri was published in 1890 by G. Hambach (which see), and that contained, with rare omissions, the species which are found in this list of Keyes; also some which are not included in Keyes's list.

Kindle, Edward M. 1898 A

A catalogue of the fossils of Indiana, accompanied by a bibliography of the literature relating to them.

22d Ann. Report Depart. Geol. and Natural Resources [of Indiana] for 1897, pp. 407-514.

The list of fossil vertebrates is found on pp. 484-485.

King, Alfred T. 1844 A

Description of fossil footmarks supposed to be referable to the classes birds, *Reptilia*, and *Mammalia* found in the Carboniferous series in Westmoreland County, Pa.

Proc. Acad. Nat. Sci. Phila., ii, pp. 175-180, and 7 woodcuts.

—— 1845 A

Description of fossil footmarks found in the Carboniferous series in Westmoreland County, Pa.

Amer. Jour. Sci., xlviii, pp. 343-352, with 12 figs.

—— 1845 B

Description of fossil footprints.

Proc. Acad. Nat. Sci. Phila., ii, pp. 299-300.

No names are given to the footprints.

—— 1845 C

Footprints.

Amer. Jour. Sci., xlix, pp. 216-217, with figs.

Figures the footprints described in King, A. T. 1845 A.

King, Alfred T.—Continued. 1846 A

Footprints in the coal rocks of Westmoreland County, Pa.

Amer. Jour. Sci. (2), i, p. 268, with 2 text figs.

No names are given to these tracks. Lyell regards them as artificial. (Lyell, C. 1846 A. p. 25.)

King, Clarence. 1878 A

Systematic geology.

U. S. Geol. Explor. 40th parallel, Clarence King, geologist in charge. i.

In this volume are found several lists of the fossil vertebrates which characterize the Tertiary formations. No descriptions of the remains are given. The lists are found on the following pages: Jurassic, p. 346; Wasatch, p. 376-377; Bridger, p. 403-405; Uinta, p. 407; White R., p. 411; John Day, p. 424; Loup Fork, p. 430; Equus beds, p. 443. These lists were no doubt furnished by Prof. O. C. Marsh.

King, William. 1850 A

A monograph of the Permian fossils of England. London, 1850. Printed for the Palæontographical Society.

Pp. i-xxxviii; 1-258, with pls. i-xxviii.

Kingsley, J. S., and **Ruddick,** W. H. 1900 A

The ossicula auditus and mammalian ancestry.

Amer. Naturalist, xxxiii, pp. 219-230, with 3 text figs.

Kiprijanoff, Valerian. 1852 A

Fisch-Ueberreste im Kurskschen eisenhaltigen Sandsteine. I, II.

Bull. Soc. Imp. Naturalistes de Moscou, xxv, pt. 2, pp. 221-226; 483-495, with pls. xii, xiii.

—— 1853 A

Fisch-Ueberreste im Kurskchen eisenhaltigen Sandsteine.

Bull. Soc. Imp. Naturalistes de Moscou, xxvi, pt. 2, pp. 286-294, with pl. ii.

—— 1854 A

Fisch-Ueberreste im Kurskschen eisenhaltigen Sandsteine. V.

Bull. Soc. Imp. Naturalistes de Moscou, xxvii, pt. 2, pp. 278-397, with pls. ii, iii.

—— 1881 A

Studien über die fossilen Reptilien Russlands. Th. I. Gattung *Ichthyosaurus* Konig, aus dem Severischen Sandstein oder Osteolith der Kreidegruppe.

Mém. Acad. Sci. St. Pétersbourg (7), xxviii, No. 8, pp. 1-103, with pls. i-xviii.

A considerable portion of this paper and a number of the plates are devoted to the microscopic structure of the bones of *Ichthyosaurus*.

—— 1882 A

Studien über die fossilen Reptilien Russlands. Theil II, Gattung *Plesio-*

Kiprijanoff, Valerian—Continued.

saurus Conybeare, aus dem Severischen Sandstein oder Osteolith der Kreidegruppe.

Mém. Acad. Imp. Sci. St. Pétersbourg (7), xxx, No. 6, pp. 1–55, with pls. i–xix.

Pp. 34–47, with pls. xv–xix, are devoted to the microscopical structure of the bones of species of *Plesiosaurus*.

Kittary, Modeste. 1850 A

Recherches anatomiques sur les poissons du genre *Acipenser*.

Bull. Soc. Imp. Naturalistes Moscou, xxiii, pt. 2, pp. 389–445, with pls. vi, vii.

Kittl, Ernst. 1887 A

Beiträge zur Kenntniss der fossilen Säugethiere von Maragha in Persien. I. Carnivoren.

Annalen des k. k. naturhistorischen Hofmuseums, Wien, ii, pp. 317–338, with pls. xiv–xviii.

Klaatsch, H. 1890 A

Zur Morphologie der Fischschuppen und zur Geschichte der Hartsubstanzgewebe. I. Die Schuppen der Selachier. II. Die Rhombenschuppen der Ganoiden. III. Die Schuppen der Teliostier. IV. Die Cycloidschuppen der Dipnoer und fossiler Ganoiden. Die Phylogenese der "Cycloidschuppen." V. Die Schuppen von *Ichthyophis*. VI. Die Ableitung der Schuppen. VII. Die Geschichte der Hartsubstanzgewebe.

Morpholog. Jahrbuch, xvi, pp. 97–208; 209–258, with pls. vi–viii.

Appended are references to the works of 48 authors who have treated the subject.

—— 1893 A

Ueber die Wirbelsäule der Dipnoer.

Verhandl. anatom. Gesellschaft, 7ten Versamml., 1893, pp. 130–132.

Discusses the structure of the vertebral column of *Ceratodus* and *Protopterus*, followed by remarks by Hatschek.

—— 1894 A

Ueber die Herkunft der Scleroblasten.

Morphologisches Jahrbuch, xxi, pp. 153–240, with pls. v–ix and 6 figs. in text.

A contribution to knowledge of the genesis of bone.

—— 1896 A

Die Brustflosse der Crossopterygier. Ein Beitrag zur Anwendung der Archipterygium-Theorie auf die Gliedmassen der Landwirbelthiere.

Klaatsch, A.—Continued.

Festschrift zum 70sten Geburtstage von Carl Gegenbaur, i, pp. 261–391, with pls. i–iv, and 42 text figs.

Appended is a list of 75 papers pertaining to the subject discussed.

Klein, E. F. 1863 A

Beiträge zur Osteologie der Crocodilschädel.

Jahreshefte Vereins vaterl. Naturkunde in Württemberg, xix, pp. 70–100.

—— 1879 A

Beiträge zur Osteologie des Schädels der Knochenfische.

Jahreshefte Vereins vaterl. Naturkunde in Württemberg, xxxv, pp. 66–126, with pl. i.

—— 1881 A

Beiträge zur Osteologie der Fische.

Jahreshefte Vereins väterl. Naturkunde in Württemberg, xxxvii, pp. 325–360, with pl. ii.

—— 1885 A

Beiträge zur Bildung des Schädels der Knochenfische, ii.

Jahreshefte Vereins vaterl. Naturkunde in Württemberg, xli, pp. 107–261, with pls. ii, iii.

—— 1886 A

Beiträge zur Bildung des Schädels der Knochenfische, iii.

Jahreshefte Vereins vaterl. Naturkunde in Württemberg, xlii, pp. 205–300, with pls. vii, viii.

Klever, Ernst. 1889 A

Zur Kenntniss der Morphogenese des Equidengebisses.

Morpholog. Jahrbuch, xv, pp. 308–330, with pls. xi–xiii.

Appended is a list of the works of 42 authors who have treated the subject of the dentition of the *Equidæ*.

Klippart, John H. 1875 A

Discovery of *Dicotyles* (*Platygonus*) *compressus*, Le Conte.

Proc. Amer. Assoc. Adv. Sci., 23d meeting, Hartford, 1874, pp. 1–6.

Also in Cincinnati Quarterly Journal of Science, 1875, vol. ii, pp. 1–6.

—— 1875 B

Mastodon remains in Ohio.

Cincinnati Quart. Jour. Sci., ii, pp. 151–155.

Klunzinger, C. B. 1871 A

Synopsis der Fische des Rothen Meeres. II Theil.

Verhandl. zool.-botan. Gesellsch. in Wien, xxi, pp. 441–688.

Kneeland, S. 1850 A

The *Manatus* not a cetacean but a pachyderm.

Proc. Amer. Assoc. Adv. Sci., 3d meeting, Charleston, 1850, pp. 42–47.

Kner, Rudolph. 1847 A

Ueber die beiden Arten *Cephalaspis lloydii* und *lewisii*, Agassiz.

Haidinger's Naturwiss. Abhandl. i, pp. 159–168, with pl. v.

—— 1860 A

Zur Charakteristik und Systematik der Labroiden.

Sitz.-Ber. k. Akad. Wissensch. Wien, math.-nat. Cl., xl. pp. 41–57, with pls. i–ii.

—— 1863 A

Ueber enige fossile Fische aus den Kreide- und Tertiar-schichten von Comen und Podsused.

Sitz.-Ber. k. Akad. Wissensch. Wien, math.-nat. Cl., xlviii, pp. 126–148, with pls. i–iii.

—— 1866 A

Betrachtungen über die Ganoiden, als natürliche Ordnung.

Sitz.-Ber. k. Akad. Wissensch. Wien, liv, Abth. i, pp. 519–536.

—— 1866 B

Die fossile Fische der Asphaltschiefer von Seefeld in Tirol.

Sitz.-Ber. k. Akad. Wissensch. Wien, math.-naturw. Cl., liv, Abth. i, pp. 303–334, with pls. i–vi.

For "Nachtrag" i, see the Sitzungsber. lvi, Abth. i, pp. 898–909; "Nachtrag" ii, pp. 909–913, with pls. i–iii.

—— 1866 C

Die Fische der bituminösen Schiefer von Raibl in Kärnthen.

Sitz.-Ber. k. Akad. Wissensch. Wien, liii, pp. 1–46, with pls. i–vi.

—— 1867 A

Ueber *Orthacanthus decheni* Goldf. oder *Xenacanthus decheni* Beyr.

Sitz.-Ber. k. Akad. Wissensch. Wien, math.-naturw., Cl., lv, pp. 540–584, with pls. i–x.

—— 1868 A

Ueber *Conchopoma gadiforme* nov. gen. et spec. und *Acanthodes* aus dem Rothliegenden (der untern Dyas) von Lebach bei Saarbrücken in Rheinpreussen.

Sitz.-Ber. k. Akad. Wissensch. Wien, math.-naturw., Cl., lvii, pt. i, pp. 278–304, with pls. i–viii.

Knight, —— 1835 A

[On fossil jaw of buffalo.]

Amer. Jour. Sci., xxvii, p. 166.

Opinion expressed on a jaw found at Chatauqua Lake, N. Y.

Knight, W. C. 1895 A

A new Jurassic plesiosaur from Wyoming.

Science (2), ii, p. 449.

Describes *Cimoliosaurus rex* Knight.

—— 1898 A

Some new Jurassic vertebrates from Wyoming.

Amer. Jour. Sci. (4), v, 186, with 2 figs. in the text.

Describes *Ceratodus robustus* and *C. americanus.*

—— 1898 B

Some new Jurassic vertebrates from Wyoming.

Amer. Jour. Sci. (4), v, pp. 378-380, with plate of 3 figs.

Describes and figures *Megalneusaurus rex*, a new genus based on *Cimoliosaurus rex* Knight.

—— 1899 A

The Nebraska Permian.

Jour. Geology, vii, pp. 357–374.

—— 1900 A

Some new Jurassic vertebrates.

Amer. Jour. Sci. (4), x, pp. 115–119, with 1 page of figs.

Kober, J. 1882 A

Studien über *Talpa europæa.*

Verhandl. naturf. Gesellsch. in Basel, vii Theil, pp. 62–119, with pls. i, ii.

—— 1884 A

Studien über *Talpa europæa.*

Verhandl. naturf. Gesellsch. in Basel, vii Theil, pp. 465–485, with pl. vii.

Koch, Albert. 1839 A

The mammoth (mastodon? Eds.).

Amer. Jour. Sci., xxxvi, pp. 198–200.

This article is for the most part an extract from the *Phila. Presbyterian*, but Leidy (1869 A, p. 398) attributes the authorship to Dr. Koch.

—— 1839 B

Remains of the mastodon in Missouri.

Amer. Jour. Sci., xxxvii, pp. 191–192.

—— 1840 A

A short description of fossil remains found in the State of Missouri by the author.

Written and published by Albert Koch, proprietor of the St. Louis Museum, St. Louis, Churchill & Stewart, printers, 1840, pp. 1–8, with 1 pl.

Koch, Albert—Continued. 1842 A

On the genus *Tetracaulodon.*

Proc. Geol. Soc. Lond., iii, pp. 714-716.

—— 1843 A

Description of the *Missourium theristocaulodon* (Koch), or Missouri leviathan (*Leviathan missouriensis*), together with its supposed habits and Indian traditions; also comparison on the whale, crocodile, and missourium with the leviathan as described in the 41st chapter of the Book of Job.

Fifth ed., enlarged, Dublin, 1843, pp. 1-28, with fig. on the front cover.

An edition of this was published as early as 1841.

—— 1845 A

Die Riesenthiere der Urwelt, oder das neuentdeckte *Missourium theristocaulodon*, und die Mastodonten im Allgemeinen und Besondern.

Berlin, 1845, pp. 99, pls. viii.

For review of this paper see Neues Jahrb. 1845, pp. 760-766.

—— 1845 B

[Extract from a letter to Dr. Geinitz on *Zygodon.*]

Neües Jahrb. f. Mineralogie, 1845, p. 676, with 3 figs. in the text.

—— 1851 A

Entdeckung der Zeuglodonten-Reste.

Haidinger's Berichte Mittheil. Freunden Naturwissensch. in Wien, vii, pp. 198-199, 203-204.

—— 1851 B

Das Skelet des *Zeuglodon macrospondylus.*

Haidinger's Naturwissensch. Abhandl., iv, and with its own pagination, pp. 53-64, with pl. vii.

—— 1857 A

Mastodon remains in the State of Missouri, together with evidences of the existence of man contemporaneously with the mastodon.

Trans. Acad. Sci. St. Louis, i, pp. 61-64.

—— 1857 B

[Report of Dr. Koch on explorations in Mississippi and Arkansas for the purpose of obtaining bones of *Zeuglodon.*]

Trans. Acad. Nat. Sci. St. Louis, i, pp. 17-19.

Koch, Albert—Continued. 1858 A

On the bones of *Mastodon.*

Trans. Acad. Sci., St. Louis, i, pp. 116-117.

Remarks made at meeting of the Academy and referring to Koch's discoveries.

Besides the papers above given which owe their authorship to A. Koch the following are herewith recorded, but have not been examined:

Beschreibung des *Missurian Theristokaulodon* Koch, oder Missuri-Leviathan (*Leviathan missuriensis*); die vermuthete Lebensart desselben und indianische Traditionen über der Ort, wo es ausgegraben wurde; ferner Vergleichungen des Wallfisches, des Krokodils und des Missurium mit dem Leviathan, wie solcher im 41 Capitel des Buches Hiob beschrieben wird.

Zeitschrift f. vergleich. Erdkunde, Magdeburg, 1845, iv, pp. 33-51.

——

Die Mastodontoiden der Urwelt.

With 8 plates. Berlin, 1845.

——

Kurze Beschreibung des Hydrarchos harlani (Koch), eines riesenmässigen Meeresgeheuers und dessen Entdeckung in Alabama in Nord-Amerika im Frühjahr 1845. Dresde[n].

Ueber die Gattung *Zeuglodon* Owen (*Basilosaurus* Harlan, *Hydrarchus* Koch, *Dorudon* Gibbes).

Uebersicht Schlesische Gesellschaft vaterl. Cultur, 1850, pp. 59-60.

Kölliker, Albert. 1859 A

On the different types in the microscopic structure of the skeleton of osseous fishes.

Proc. Roy. Soc. London, 1859, ix, pp. 656-668.

Issued in separate form, pp. 1-13.

—— 1860 A

Ueber das Ende der Wirbelsäule der Ganoiden und einige Teleostier.

Pp. 27, with 4 pls., Leipzig, 1860.

—— 1860 B

On the structure of the chorda dorsalis of the Plagiostomes and some other fishes, and on the relation of the proper sheath to the development of the vertebræ.

Proc. Roy. Soc. Lond., x, pp. 214-222.

Kölliker, Albert—Continued. 1863 A

Weitere Beobachtungen über die Wirbel der Selachier, insbesondere über die Wirbel der *Lamnoidei*, nebst allgemeinen Bemerkungen über die Bildung der Wirbel der Plagiostomen.

Pp. 1-51, with pls. i-v; Frankfort-on-Main, 1864.

Koenen, A. von 1883 A

Beitrag zur Kenntniss der Placodermen des norddeutschen Oberdevon's.

Abhandl. k. Gesellsch. Wissensch. Göttingen, xxx, pp. 1-41, with pls. i-iv.

—— 1890 A

Coccosteus decipiens.

Geol. Magazine (3), vii, p. 191.

Discusses question of the existence of a pectoral spine.

—— 1895 A

Ueber einige Fischreste des norddeutschen und böhmischen Devons.

Abhandl. k. Gesellsch. Wissensch. Göttingen, xl, math.-phys. Cl., art. 2, pp. 1-37, with pls. i-v.

Koken, Ernst. 1883 A

Die Reptilien der norddeutschen unteren Kreide.

Zeitschr. deutsch. geol. Gesellsch., xxxv, pp. 735-827, with pls. xxiii-xxv.

—— 1884 A

Ueber Fisch-Otolithen, insbesondere über diejenigen der norddeutschen Oligocän-Ablagerungen.

Zeitschr. deutsch. geol. Gesellsch., xxxvi, pp. 500-565, with pls. ix-xii.

—— 1886 A

[Review of papers by L. Dollo and V. Lemoine.]

Neues Jahrb. Min. Geol. und Palæont., 1886, ii, pp. 289-292, Referate.

—— 1887 A

Die Dinosaurier, Crocodiliden und Sauropterygier des norddeutschen Wealden.

Palæontolog. Abhandl., iii, pp. 309-419 (1-111), with 9 pls. and 30 figs. in the text.

—— 1888 A

Neue Untersuchungen an tertiären Fisch-Otolithen.

Zeitschr. deutsch. geol. Gesellsch., xl, pp. 274-305, with pls. xvii-xix.

Describes and figures 23 species of otoliths of fishes from the Tertiary deposits of the Southern States of the United States.

Koken, Ernst—Continued. 1888 B

Thoracosaurus macrorhynchus, Bl., aus der Tuffkreide von Maastricht.

Zeitschr. deutsch. geol. Gesellsch., xl, pp. 754-773, with pl. xxxii.

—— 1888 C

Eleutherocercus, ein neuer Glyptodont aus Uruguay.

Abhandl. k. Akad. Wissensch. Berlin, 1888, phys.-math. Cl., Abh. i, pp. 1-28, pls. i, ii.

—— 1889 A

Ueber *Pleuracanthus* Ag. oder *Xenacanthus* Beyr.

Sitz.-Ber. Gesellsch. naturf. Freunde Berlin, 1889, pp. 77-94, with 5 figs. in the text.

—— 1891 A

Neue Untersuchungen an tertiären Fisch-Otolithen, ii.

Zeitschr. deutsch. geol. Gesellsch., xliii, pp. 77-170, with pls. i-x, and 27 figs. in the text.

Description of species, a list of known species of Europe, and a discussion of the significance of the otoliths and of the organ of hearing for the natural classification of fishes.

—— 1891 B

[Remarks on the *Physostomi*.]

Sitz.-Ber. Gesellsch. naturf. Freunde Berlin, 1891, pp. 26-28.

Deals especially on relationship of *Cyprinidæ* and *Siluridæ*.

—— 1893 A

Beiträge zur Kenntniss der Gattung *Nothosaurus.*

Zeitschr. deutsch. geol. Gesellsch., xlv, pp. 337-377, with pls. vii-xi, and 12 figs. in the text.

—— 1896 A

Die Reptilien des norddeutschen Wealden.

Palæontolog. Abhandl., vii (n. s. iii), pp. 117-126 (1-10) with 4 pls. and 1 fig. in the text.

Kollmann, J. 1888 A

Handskelett und Hyperdaktylie.

Verhandl. anatom. Gesellsch., 2ten Versamml., pp. 25-39, with plate of 12 figs.

A paper with the same title is found in Verhandl. Gesellsch. Basel, viii, 1890, pp. 604-626; pl. viii.

Komnek, L. See **Van Beneden and Komnek.**

Koninck, L. G. de. 1844 A

Description des animaux fossiles que se trouvent dans le terrain carbonifère de Belgique.

Pp. i-iv; 1-716, with atlas of 60 pls.

Contains (pp. 608-618) descriptions of a few fishes.

Koninck, L. G. de—Continued. 1878 A
Faune du Calcaire carbonifère de la Belgique. Première partie, poissons et genre nautile.
Annales Musée nat. Belgique, ii, pp. 9-76, with pls. i-viii, and figs. in the text.
The pages referred to are devoted to descriptions of the fishes.

Kosmak, George William. 1895 A
Dermal armor of the sturgeon.
Jour. New York Microscop. Soc., xi, pp. 1-21, with pls. xlvi-xlviii.

Köstlin, Otto. 1844 A
Der Bau des knöchernen Kopfes in den vier Klassen der Wirbelthiere.
Stuttgart, 1844, 8 vo, pp. i-x; 1-506, with pls. i-iv.

Kowalevsky, Woldemar. 1873 A
Monographie der Gattung *Anthracotherium* Cuv. und Versuch einer natürlichen Classification der fossilen Hufthiere.
Palæontographica, xxii, 131-346, with pls. vii-xvii.

—— 1873 B
Sur l'*Anchitherium aurelianense* Cuv. et sur l'histoire paléontologique des chevaux.
Mém. Acad. Imp. Sci. St. Pétersbourg (7), xx, No. 5, pp. i-iv; 1-73, with pls. i-iii.

—— 1874 A
On the osteology of the *Hyopotamidæ*.
Philosoph. Trans. Roy. Soc. Lond., clxiii, pp. 19-94; pls. 35-40.

—— 1876 A
Osteologie des Genus *Entelodon* Aym.
Palæontographica, xxii, 415-450, with pls. xxv-xxvii.

Kramberger, Dragutin. 1881 A
Studien über die Gattung *Saurocephalus* Harlan.
Jahrbuch k-k. geol. Reichsanstalt Wien., xxxi, pp. 371-379.
Saurocephalus and related genera are placed in family *Scopeloidei* and subfamily *Saurodontidæ*, and a new genus *Solenodon* is described.

Krause, W. 1881 A
Zum Sacralhirn der Stegosaurier.
Biolog. Centralbl., i, p. 461.

Krauss, Ferd. 1858 A
Beiträge zur Osteologie des surinamischen *Manatus*.
Archiv. f. Anat.. Physiol. wissensch. Med., 1858, pp. 390-425.

Krauss, Ferd.—Continued. 1862 A
Beiträge zur Osteologie des surinamischen *Manatus*.
Archiv f. Anat. Physiol., wissensch. Med., 1862, pp. 415-427; pl. xiii.

—— 1870 A
Beiträge zur Osteologie von *Halicore*.
Archiv f. Anat. Physiol., wissensch. Med., 1870, pp. 525-614.

Krefft, Gerard. 1870 A
Description of a gigantic amphibian allied to the genus *Lepidosiren*, from the Wide Bay district, Queensland.
Proc. Zool. Soc. Lond., 1870, pp. 221-224, with 3 figs.
Description of *Ceratodus forsteri*.

Kükenthal, Willy. 1888 A
Über die Hand der Cetaceen.
Anatom. Anzeiger, iii, pp. 638-646; 912-915, with 6 figs. in the text.

—— 1889 A
Vergleichend-anatomische und entwicklungsgeschichtliche Untersuchungen an Walthieren.
Denkschr. med.-naturwiss. Gesellsch. zu Jena., iii, pp. 1-200, with pls. i-xiii.
For conclusion see Kükenthal 1893 C.

—— 1890 A
Über die Hand der Cetaceen.
Anatom. Anzeiger v, pp. 44-52, with 8 figs. in the text.

—— 1890 B
Über Reste eines Hautpanzers bei Zahnwalen.
Anatom. Anzeiger, v, pp. 237-240.

—— 1890 C
Ueber die Anpassung von Säugetheiren an das Leben im Wasser.
Spengel's Zoolog. Jahrbücher, Abth. f. Systematik, Geog. und Biol. d. Thiere, v. pp. 373-399.
Translation in Ann. and Mag. Nat. Hist. (6), vii, 1891, pp. 153-179.

—— 1891 A
Einige Bemerkungen über Säugethierbezahnung.
Anatom. Anzeiger, vi, pp. 364-370.

—— 1891 B
Das Gebiss von *Didelphys*.
Anatom. Anzeiger, vi, pp. 658-666, with 8 figs. in the text.
Abstract in Zoolog. Record for 1891, Mamm., p. 10.

—— 1891 C
Ueber die Anpassung von Säugethieren an das Leben im Wasser.
Zoolog. Jahrbücher, Systematik, etc., v, pp. 373-399.

Kükenthal, Willy—Continued. 1892 A

Ueber die Entstehung und Entwicklung des Säugetierstammes.

Biolog. Centralbl., xii, pp. 400–413.

A translation of this paper is found in Ann. and Mag. Nat. Hist. (6), x, 1892, pp. 365–380.

—— 1892 B

Ueber den Ursprung und die Entwicklung der Säugetierzähne.

Jenaische Zeitschr., xxvi (xix), pp. 469–489.

—— 1893 A

Zur Entwicklung des Handskelettes des Krokodils.

Morpholog. Jahrbuch, xix, pp. 42–55, with pl. ii.

The part of the Morpholog. Jahrbuch containing this paper was issued in October, 1892.

—— 1893 B

Mittheilungen über den Carpus des Weisswals. (Die Bildung des Hamatums und das Vorkommen von zwei und drie Centralien.)

Morpholog. Jahrbuch, xix, pp. 56–64, with pl. iii.

—— 1893 C

Vergleichend-anatomische und entwicklungsgeschichtliche Untersuchungen an Walthieren. II.

Denkschr. med.-naturwiss, Gesellsch. zu Jena., iii, pp. 224–448, with pls. xiv–xxv.

—— 1894 A

Entwicklungsgeschichtliche Untersuchungen am Pinnipediergebisse.

Jenaische Zeitschr., xxviii (xxi), pp. 76–118, with pls. iii and iv.

—— 1895 A

Ueber Rudimente von Hinterflossen bei Embryonen von Walen.

Anatom. Anzeiger, x, pp. 534–537.

—— 1895 B

Zur Dentitionenfrage.

Anatom. Anzeiger, x, pp. 653–659.

Treats of the origin of the mammalian dentition.

—— 1896 A

Zur Entwicklungsgeschichte des Gebisses von *Manatus*.

Anatom. Anzeiger, xii, pp. 513–526, with 10 figs. in the text.

—— 1897 A

Vergleichend-anatomische und entwicklungsgeschichtliche Untersuchungen an Sirenen.

Semon's Zoolog. Forschungsreisen in Australien, etc., iv, pp. 1–75, with pls. i–v and 47 text figs.

Kunth, A. 1872 A

Ueber *Pteraspis*.

Zeitschr. deutsch. geol. Gesellsch., xxiv, pp. 1–8, with pl. i.

L. P. B. 1885 A

Professor Marsh's Monograph of the *Dinocerata*.

Amer. Jour. Sci. (3), xxix, pp. 173–204, with 38 figs in the text.

Lahusen, I. 1880 A

Zur Kenntniss der Gattung *Bothriolepis*, Eichw.

Verhandl. russ-kais. mineralog. Gesellsch., St. Petersburg (2), xv, pp. 125-139, with pls. i, ii.

Lambe, Lawrence M. 1898 A

On the remains of mammoths in the museum of the Geological Survey Department.

Ottawa Naturalist, xii, pp. 136–137.

—— 1899 A

On reptilian remains from the Cretaceous of northwestern Canada.

Ottawa Naturalist, xiii, pp. 68-70.

See also Summary report of Geol. Surv. Dept. Canada for year 1898, pp. 182–190.

Account of fossil remains found in districts of Alberta and Assiniboia.

Landois, ———. 1871 A

Das Gebiss eines jungen Mammuth.

Verhandl. naturhist. Vereines preuss. Rheinlande, etc., xxviii, Corr. Bl., pp. 47–49, with pl. ix.

—— 1881 A

Ueber die Reduktion der Zehen bei den Säugethieren durch Verkümmerung und Verschmelzung.

Verhandl. naturf. Vereines preuss. Rheinlande, etc., xxxviii, Corr. Bl., pp. 125–129.

Lang, Fr., and **Rütimeyer**, L. 1867 A

Die fossilen Schildkröten von Solothurn.

Neue Denkschriften d. allgem. schweiz. Gesellsch. f. d. gesammt. Naturwissensch., xxii, art. 5, pp. 1–48, with pls. i, ii, consisting of profiles and sections and a geological map of the region.

Langdon, F. W. 1883 A

The giant beaver (*Castoroides ohioensis*) Foster.

Jour. Cincinnati Soc. Nat. Hist., vi, pp. 238–239.

Lankester, E. R. 1862 A

Restoration of *Pteraspis*.

The Geologist, v, pp. 451–452, with 3 text figs.

Lankester, E. R.—Continued. 1864 A

On the discovery of the scales of *Pteraspis*, with some remarks on the cephalic shield of that fish.

Quar. Jour. Geol. Soc., xx, pp. 194-197, with pl. xii.

—— 1864 B

Restoration of *Pteraspis*.

The Geologist, vii, p. 136.

—— 1865 A

On the genus *Pteraspis*.

Report Brit. Assoc. Adv. Sci., 34th meeting, Bath, 1864, p. 100. See also p. 58.

Divided into subgenera *Pteraspis*, *Cyathaspis*, and *Scaphaspis*.

—— 1870 A

On a new *Cephalaspis* discovered in America, etc.

Geol. Magazine, vii, pp. 397-398, with 3 woodcuts in the text.

Describes *C. dawsoni* and refers to the finding of *Machairacanthus sulcatus*.

—— 1873 A

On *Holaspis sericeus*, and on the relationship of the fish-genera, *Pteraspis*, *Cyathaspis*, and *Scaphaspis*.

Geol. Magazine, x, pp. 241-245, with pl. x.

—— 1873 B

On *Scaphaspis* and *Pteraspis*.

Geol. Magazine, x, pp. 190-192.

Extract from the Academy of Jan. 1, 1873, replying to Kunth.

—— 1873 C

Note on *Holaspis sericeus*.

Geol. Magazine (1), x, pp. 331-332, with 1 woodcut.

—— 1874 A

Magister Schmidt on the shields of *Pteraspis* and *Scaphaspis*.

Geol. Magazine (2), i, p. 288.

See also **Moseley** and **Lankester**.

Lapham, I. A. 1855 A

On the number of teeth of the *Mastodon giganteus*.

Proc. Bost. Soc. Nat. Hist., v, pp. 133-136.

Lartet, Éd. 1837 A

Fossiles provenant du depôt de Sansan.

Compte rendu Acad. Sci., Paris, v, pp. 418, 427.

—— 1866 A

Note sur deux nouveaux siréniens fossiles des terrains tertiaires du bassin de la Garonne.

Bull. Soc. Géol. France, xxiii, pp. 673-686, pl. xiii.

Lataste, Fernand. 1889 A

Considerations sur les deux dentitions des mammifères.

Jour. l'Anat. Physiol., xxv, pp. 200-222.

Numerous references are made to the writings of other authors.

Lathrop, S. P. 1851 A

Mastodon in northern Illinois.

Amer. Jour. Sci. (2), xii, p. 439.

Lawley, R. 1875 A

Monografia del genere *Notidanus*.

Pp. 1-34, with pls. i-iv, Firenze, 1875.

This paper appears to have been published also in Atti Soc. Toscano, iii, 1877.

Lazier and Parieu. 1839 A

Note sur la machoire d'un carnassier fossile, nommé Hyénodon *leptorhynchus*.

Ann. Sci. Naturelles, (2), xi, pp. 27-31, with pl. ii.

Lea, Isaac. 1849 A

On reptilian footmarks found in the gorge of Sharp Mountain, near Pottsville, Pa.

Proc. Amer. Phil. Soc., iv, pp. 91-94, with fig. in text.

Noticed in Amer. Jour. of Sci., vol. ix, pp. 124-125.

Describes *Sauropus primævus*.

—— 1850 A

On traces of a fossil reptile (*Sauropus primævus*) found in the Old Red sandstone.

Report Brit. Assoc. Adv. Sci., 19th meeting, Birmingham, 1849, p. 56.

—— 1851 A

Remarks on the bones of a fossil reptilian quadruped.

Proc. Acad. Nat. Sci. Phila., v, pp. 171-172.

Describes *Clepsysaurus pennsylvanicus*, but gives no generic name.

—— 1851 B

Remarks on *Clepsysaurus pennsylvanicus*.

Proc. Acad. Nat. Sci. Phila., v. p. 205.

The generic name is here first given.

—— 1852 A

On the fossil footmarks in the red sandstones of Pottsville, Schuylkill County, Pa.

Trans. Amer. Philos. Soc., x, pp. 307-317, pls. xxxi-xxxiii.

—— 1853 A

Description of a fossil saurian of the New Red sandstone formation of Pennsylvania.

Jour. Acad. Nat. Sci. Phila. (2), pp. 185-202, pls. xvii-xix.

Description of *Clepsysaurus pennsylvanicus*.

Lea, Isaac—Continued. 1853 B

On some new fossil molluscs in the Carboniferous slates of the anthracite seams of the Wilkesbarre coal formation.

Jour. Acad. Nat. Sci. Phila. (2), ii, pp. 203–206, with pl. xx.

Contains, on p. 206, with pl. xx, figs. 4, 5, a description of *Palæoniscus ? leidyiana.*

—— 1855 A

Fossil footmarks in the red sandstone of Pottsville, Pa.

Philadelphia, 1855, pp. 1–16, with 1 pl. Elephant folio.

Contains plate showing tracks of *Sauropus primævus* of the natural size.

—— 1856 A

[Description of *Centemodon sulcatus.*]

Proc. Acad. Nat. Sci. Phila., 1856, pp. 77–78.

—— 1856 B

Reptilian remains in the New Red sandstone of Pennsylvania.

Amer. Jour. Sci. (2), xxii, pp. 122–124.

Repeated on pp. 422–423, same volume. From Proc. Acad. Nat. Sci. Phila., viii, 1856, p. 77.

—— 1858 A

[Remarks respecting *Clepsysaurus* and *Bathygnathus borealis.*]

Proc. Acad. Nat. Sci. Phila., 1858, pp. 90–92.

Lebouq, H. 1887 A

La nageoire pectorale des Cétacés au point du vue phylogénique.

Anatom. Anzeiger, ii, pp. 202–208.

—— 1888 A

Über das Fingerskelett der Pinnipedier und der Cetaceen.

Anatom. Anzieger, iii, pp. 530–534.

Also in Verhandl. Anat. Geselschaft, 1888, pp. 40–44.

—— 1896 A

Ueber Hyperphalangie bei den Säugetieren.

Anatom. Anzeiger, xii, Ergänzungsheft, pp. 174–176.

Leche, W. 1877 A

Studien über das Milchgebiss und die Zahnhomologien bei den *Chiroptera.*

Archiv Naturgesch., xliii, i, pp. 353–364.

—— 1880 A

Zur Morphologie der Beckenregion bei *Insectivora.*

Morpholog. Jahrbuch, vi, pp. 597–602.

—— 1893 A

Studien über die Entwicklung des Zahnsystems bei den Säugethieren.

Morpholog. Jahrbuch, xix, pp. 502–547, with 20 text figs.

Abstract in Zoological Record for 1893, Mamm., p. 8.

Leche, W.—Continued. 1893 B

Nachträge zü Studien über die Entwicklung des Zahnsystems bei der Säugethieren.

Morpholog. Jahrbuch, xx, pp. 113–142, with 12 figs. in the text.

—— 1895 A

Zur Entwicklungsgeschichte des Zahnsystems der Säugethiere, zugleich ein Beitrag zur Stammesgeschichte dieser Thiergruppe. I. Theil. Ontogonie.

Bibliotheca Zoologica, Heft 17, pp. 1–160, with 19 pls. and 20 text figs. Stuttgart, 1895.

Pp. 157–160 of this important work are occupied by a list of the authorities which the author has cited.

Reviewed by Max Fürbringer, Morpholog. Jahrbuch, vol. xxiii, p. 592.

—— 1896 A

Zur Entwicklungsgeschichte des Zahnsystems der Säugethiere, zugleich ein Beitrag zur Stammesgeschichte dieser Gruppe.

Biolog. Centralbl., xvi, pp. 283–296.

—— 1896 B

Die Entwicklung des Zahnsystems der Säugethiere.

Compte rendu des séances du troisième Congres Internat. de Zoologie. Leyden, 1895 pp. 279–289.

—— 1897 A

Zur Morphologie des Zahnsystems der Insectivoren.

Anatom. Anzeiger, xiii, pp. 1–11, with 10 figs. in the text.

—— 1897 B

Zur Morphologie des Zahnsystems der Insectivoren.

Anatom. Anzeiger, xiii, pp. 513–529, with 7 figs. in the text.

—— 1897 C

Untersuchungen über das Zahnsystem lebender und fossiler Halbaffen.

Festschrift zum 70sten Geburtstage von Carl Gegenbaur, iii, pp. 127–166, with pl. i, and 20 figs. in the text.

Le Conte, John L. 1848 A

Notice of five new species of fossil *Mammalia* from Illinois.

Amer. Jour. Sci. (2), v, pp. 102–106, with 3 text figs.

—— 1848 B

On *Platygonus compressus;* a new fossil pachyderm.

Mem. Amer. Acad. Arts and Sciences, iii, pp. 257–274, with pls. i–iv.

—— 1852 A

Notes on some suilline pachyderms from Illinois.

Proc. Acad. Nat. Sci. Phila., vi, pp. 3–5.

Le Conte, John L.—Continued. 1852 B

Notice of a fossil *Dicotyles* from Missouri.

Proc. Acad. Nat. Sci. Phila., vi, pp. 5–6.

Describes *D. costatus* LeC.

—— 1852 C

[Remarks on *Castoroides ohioensis* from Shawneetown, Illinois.]

Proc. Acad. Nat. Sci. Phila., vi, p. 53.

—— 1852 D

Remarks on some fossil pachyderms from Illinois.

Proc. Acad. Nat. Sci. Phila., vi, pp. 56–57.

Le Conte, Joseph, 1883 A

Carson footprints.

Nature, xxviii, pp. 101–102.

Lee, W. T. 1897 A

[A Mosasauroid from Colorado.]

Amer. Naturalist, xxxi, p. 614.

Said to belong probably to *Clidastes;* no specific name assigned and only a general description.

Lefèvre, Th. 1889 A

Note préliminaire sur les restes de Siréniens recueillis en Belgique.

Zoolog. Anzeiger, xii, pp. 197–200.

Leidy, Joseph. 1847 A

On the fossil horse of America.

Proc. Acad. Nat. Sci. Phila., iii, pp. 262–266, pl. ii.

Describes *Equus americanus.*

—— 1847 B

On a new genus and species of fossil *Ruminantia: Poëbrotherium wilsoni.*

Proc. Acad. Nat. Sci. Phila., iii, pp. 322–326.

—— 1847 C

[Observations on *Equus americanus.*]

Proc. Acad. Nat. Sci. Phila., iii, p. 328.

—— 1848 A

On a new genus and species of fossil *Ruminantia: Poëbrotherium wilsoni.*

Amer. Jour. Sci. (2), v, pp. 276–279.

Extracted from Proc. Phil. Acad., Nov. 1847, p. 322. Reprinted in Ann. and Mag. Nat. Hist. (2) ii, pp. 389–392.

—— 1848 B

On a new fossil genus and species of ruminantoid *Pachydermata: Merycoidodon culbertsonii.*

Proc. Acad. Nat. Sci. Phila., iv, pp. 47–50, with 1 plate of 5 figs.

—— 1849 A

Tapirus americanus fossilis.

Proc. Acad. Nat. Sci. Phila., iv, pp. 180–182.

—— 1850 A

Observations on two new genera of fossil *Mammalia, Eucrotophus jacksoni,* and *Archæotherium mortoni.*

Proc. Acad. Nat. Sci. Phila., v, pp. 90–93.

Leidy, Joseph—Continued. 1850 B

Remarks on *Rhinoceros occidentalis.*

Proc. Acad. Nat. Sci. Phila. v, p. 119.

Contains no description.

—— 1850 C

Descriptions of *Rhinoceros nebrascensis, Agriochœrus antiquus, Palæotherium proutii,* and *P. bairdii.*

Proc. Acad. Nat. Sci. Phila., v, pp. 121–122.

—— 1851 A

Remarks on *Palæotherium proutii.*

Proc. Acad. Nat. Sci. Phila., v, pp. 170–171.

—— 1851 B

[Description of *Stylemys nebrascensis.*]

Proc. Acad. Nat. Sci. Phila., v, pp. 172–173.

—— 1951 C

Descriptions of *Testudo lata* and *Emys hemispherica.*

Proc. Acad. Nat. Sci. Phila., v, p. 173.

—— 1851 D

Descriptions of fossil ruminant ungulates from Nebraska.

Proc. Acad. Nat. Sci. Phila., v, pp. 237–239.

Describes *Oreodon priscum* and *Cotylops speciosa.*

—— 1851 E

[Remarks on *Oreodon priscus* and *Rhinoceros occidentalis.*]

Proc. Acad. Nat. Sci. Phila., v, p. 276.

—— 1851 F

[Descriptions of two fossil species of *Balæna, B. palæatlantica* and *B. prisca.*]

Proc. Acad. Nat. Sci. Phila., v, pp. 308–309.

—— 1851 G

[Descriptions of a number of fossil reptiles and mammals.]

Proc. Acad. Nat. Sci. Phila., v, pp. 325–328.

—— 1851 H

[Descriptions of fossils from the Green-sand of New Jersey.]

Proc. Acad. Nat. Sci. Phila., v, pp. 329–330.

—— 1851 I

[Remarks on *Aceratherium.*]

Proc. Acad. Nat. Sci. Phila., v, p. 331.

—— 1851 J

[Description of the genus *Arctodon.*]

Proc. Acad. Nat. Sci. Phila., v, p. 278.

No specific name is indicated for the teeth described.

—— 1851 K

Fossil bones from Big Bone Lick, Kentucky.

Proc. Acad. Nat. Sci. Phila., v, p. 140.

—— 1852 A

[Description of a new rhinoceros from Nebraska, *R. americanus.*]

Proc. Acad. Nat. Sci. Phila., vi, p. 2.

Leidy, Joseph—Continued. 1852 B

[Descriptions of *Delphinus conradi* and *Thoracosaurus grandis*.]

Proc. Acad. Nat. Sci. Phila., vi, p. 35.

—— 1852 C

[Description of *Pontogeneus priscus*.]

Proc. Acad. Nat. Sci. Phila., vi, p. 52.

—— 1852 D

[Description of *Emys culbertsoni*.]

Proc. Acad. Nat. Sci. Phila., vi, p. 34.

—— 1852 E

[Remarks on fossil tortoises from Nebraska.]

Proc. Acad. Nat. Sci. Phila., vi, p. 59.

—— 1852 F

[Remarks on two crania of extinct species of ox.]

Proc. Acad. Nat. Sci. Phila., vi, p. 71.

—— 1852 G

[*Tapirus haysii* named.]

Proc. Acad. Nat. Sci. Phila., vi, p. 106.

Name given to tooth presented by Dr. Hays.

—— 1852 H

[Remarks on fossil ox and on extinct *Edentata*.]

Proc. Acad. Nat. Sci. Phila., vi, p. 117.

—— 1852 I

[Remarks on *Tapirus haysii*.]

Proc. Acad. Nat. Sci. Phila., vi, p. 148.

—— 1852 J

Description of the remains of extinct *Mammalia* and *Chelonia* from Nebraska Territory, collected during the geological survey under the direction of Dr. D. D. Owen.

David D. Owen's "Report of a geological survey of Wisconsin, Iowa, and Minnesota and incidentally a portion of Nebraska Territory," pp. 534–572, pls. ix–xv.

—— 1852 K

Description of a new species of crocodile from the Miocene of Virginia.

Jour. Acad. Nat. Sci. Phila. (2), ii, pp. 135–138, pls. xvi.

Description of *Crocodilus antiquus* given.

—— 1852 L

Report upon some fossil *Mammalia* and *Chelonia* from Nebraska.

Sixth Annual Report Regents Smithsonian Institution, for 1851, pp. 63–65.

—— 1853 A

Memoir on the extinct species of American ox.

Smithsonian Contributions to Knowledge, v, art. 3, pp. 1–20, pls. i–v.

This memoir is said to have been published in Dec., 1852.

Leidy, Joseph—Continued. 1853 B

[Description of *Ursus amplidens*.]

Proc. Acad. Nat. Sci. Phila., vi, p. 303.

—— 1853 C

[Observations on extinct *Cetacea*.]

Proc. Acad. Nat. Sci. Phila., vi, pp. 377–378.

—— 1853 D

[Remarks on a collection of fossil *Mammalia* from Nebraska.]

Proc. Acad. Nat. Sci. Phila., vi, pp. 392–394.

—— 1853 E

Remarks on several fossil teeth.

Proc. Acad. Nat. Sci. Phila., vi, p. 241.

This abstract of remarks contains as names of new species, *Hipparion venustum*, *Oromys æsopi*, *Eubradys antiquus*, and *Ereptodon priscus*. No descriptions accompany these names.

—— 1853 F

Description of an extinct species of American lion, *Felis atrox*.

Trans. Amer. Philos. Soc., x, pp. 319–321, pl. xxxiv.

This species appears to be first mentioned, without description, in Proc. Amer. Phil. Soc., v. 261, 1853.

—— 1853 G

A memoir on the extinct *Dicotylinæ* of America.

Trans. Amer. Philos. Soc., x, pp. 323–343, pls. xxxv–xxxviii.

—— 1854 A

The ancient fauna of Nebraska, or a description of remains of extinct *Mammalia* and *Chelonia* from the Mauvais Terres of Nebraska.

Smithsonian Contributions to Knowledge, vi, art. vii, pp. 1–126, pls. i–xxiv.

—— 1854 B

Remarks on extinct saurians from Arkansas.

Proc. Acad. Nat. Sci. Phila., vii, p. 72, with pl. ii.

Describes *Brimosaurus grandis*.

—— 1854 C

[Remarks on *Sus americanus*, or *Harlanus americanus*, and on other extinct mammals.]

Proc. Acad. Nat. Sci. Phila., vii, pp. 89–90.

—— 1854 D

Remarks on a new species of mammal from Nebraska, *Dinictis felina*.

Proc. Acad. Nat. Sci. Phila., vii, p. 127.

Insufficient description.

—— 1854 E

Synopsis of extinct *Mammalia*, the remains of which have been discovered in the Eocene formations of Nebraska.

Proc. Acad. Nat. Sci. Phila., vii, pp. 156–157.

Leidy, Joseph—Continued. 1854 F

Description of a fossil apparently indicating an extinct species of the camel tribe.

Proc. Acad. Nat. Sci. Phila., vii, pp. 172-173.

Describes *Camelops kansanus*.

—— 1854 G

Remarks on the question of the identity of *Bootherium cavifrons* with *Ovibos moschatus* or *O. maximus*.

Proc. Acad. Nat. Sci. Phila., vii, pp. 209-210.

—— 1854 H

On *Bathygnathus borealis*, an extinct saurian of the New Red sandstone of Prince Edward's Island.

Jour. Acad. Nat. Sci. Phila., (2), ii, pp. 327-330, pl. xxxiii.

—— 1854 I

Notice of some fossil bones discovered by Mr. Francis A. Lincke, in the banks of the Ohio River, Indiana.

Proc. Acad. Nat. Sci. Phila., vii, pp. 199-201.

These bones were found below Evansville, Ind., and consisted of *Megalonyx jeffersonii*, *Bison americanus*, *Cervus virginianus*, *Equus americanus*, *Tapirus haysii* and *Canis primævus*.

—— 1855 A

On *Bathygnathus borealis*, an extinct saurian of the New Red sandstone of Prince Edward's Island.

Amer. Jour. Sci. (2), xix, pp. 444-446.

Extracted from the Jour. of the Acad. of Nat. Sci. Phila., vol. ii, and same as Leidy, J. 1854 H.

—— 1855 B

A memoir on the extinct sloth tribe of North America.

Smithsonian Contributions to Knowledge, vii, art. v, pp. 1-68, pls. i-xvi.

—— 1855 C

Indications of twelve species of fossil fishes.

Proc. Acad. Nat. Sci. Phila., vii, pp. 395-397.

—— 1855 D

Indications of five species, with two new genera, of extinct fishes.

Proc. Acad. Nat. Sci. Phila., vii, p. 414.

—— 1856 A

Description of two ichthyodorulites.

Amer. Jour. Sci. (2), xxi, pp. 421-422.

From Proc. Acad. Nat. Sci. Phila., vol. viii, p. 11.

—— 1856 B

Notice of some remains of extinct *Mammalia*, recently discovered by Dr. F. V. Hayden in the Bad Lands of Nebraska.

Amer. Jour. Sci. (2), xxi, pp. 422-423.

From Proc. Phil. Acad., viii, p. 59; same as Leidy, 1856 D.

Leidy, Joseph—Continued.

—— 1856 C

Notices of remains of extinct reptiles and fishes discovered by Dr. F. V. Hayden in the Bad Lands of the Judith River, Nebraska Territory.

Amer. Jour. Sci. (2), xxii, pp. 118-120.

Extracted from Proc. Phil. Acad. See Leidy, 1856 F.

—— 1856 D

Notice of some remains of extinct *Mammalia*, recently discovered by Dr. F. V. Hayden in the bad lands of Nebraska.

Proc. Acad. Nat. Sci. Phila., viii, p. 59.

Also in Amer. Jour. Sci. (2), xxi, p. 422.

—— 1856 E

Description of two ichthyodorulites.

Proc. Acad. Nat. Sci. Phila., viii, pp. 11-12.

Description of *Stenacanthus nitidus* and *Cylindracanthus ornatus*.

—— 1856 F

Notice of remains of extinct reptiles and fishes, discovered by Dr. F. V. Hayden in the Bad Lands of the Judith River, Nebraska Territory.

Proc. Acad. Nat. Sci. Phila., viii, pp. 72-73.

—— 1856 G

Notice of the remains of a species of extinct seal, from the Post-pliocene deposit of the Ottawa River.

Proc. Acad. Nat. Sci. Phila., viii, pp. 90-91, with pl. iii.

Reprinted in Canadian Naturalist and Geologist, i, p. 238, with pl., 1856.

—— 1856 H

Notices of several genera of extinct *Mammalia*, previously less perfectly characterized.

Proc. Acad. Nat. Sci. Phila., viii, pp. 91-92.

—— 1856 I

Notices of remains of extinct *Mammalia*, discovered by Dr. F. V. Hayden in Nebraska Territory.

Proc. Acad. Nat. Sci. Phila., viii, pp. 88-90.

—— 1856 J

Notice of some remains of extinct vertebrated animals.

Proc. Acad. Nat. Sci. Phila., viii, pp. 163-165.

Leidy, Joseph—Continued 1856 K

Notices of remains of extinct vertebrate animals of New Jersey, collected by Professor Cook, of the State geological survey, under the direction of Dr. W. Kitchell.

Proc. Acad. Nat. Sci. Phila., viii, pp. 220–221.

—— 1856 L

Notices of extinct vertebrated animals discovered by Prof. E. Emmons.

Proc. Acad. Nat. Sci. Phila., viii, pp. 255–256.

See also Amer. Jour. Sci., xxiii, 1857, pp. 271–272.

—— 1856 M

Notice of some remains of fishes discovered by Dr. John E. Evans.

Proc. Acad. Nat. Sci. Phila., viii, pp. 256–257.

—— 1856 N

Notice of remains of two species of seals.

Proc. Acad. Nat. Sci. Phila., viii, p. 265.

—— 1856 O

Remarks on certain extinct species of fishes.

Proc. Acad. Nat. Sci. Phila., viii, pp. 301–302.

—— 1856 P

Notices of remains of extinct turtles of New Jersey, collected by Professor Cook, of the State geological survey, under the direction of Dr. W. Kitchell.

Proc. Acad. Nat. Sci. Phila., viii, pp. 303–304.

—— 1856 Q

Notices of extinct *Vertebrata* discovered by Dr. F. V. Hayden, during the expedition to the Sioux country under the command of Lieut. G. K. Warren.

Proc. Acad. Nat. Sci. Phila., viii, pp. 311–312.

—— 1856 R

[Remarks on extinct *Dicotylinæ*.]

Proc. Acad. Nat. Sci. Phila., 1856, p. 140.

—— 1856 S

Descriptions of some remains of fishes from the Carboniferous and Devonian formations of the United States.

Jour. Acad. Nat. Sci. Phila. (2), iii, pp. 159–160.

—— 1856 T

Description of some remains of extinct *Mammalia*.

Jour. Acad. Nat. Sci. Phila. (2), iii, pp. 166–171, pl. 17.

Describes *Camelops kansanus*, *Canis primævus*, *Usus amplidens*, *Procyon priscus* and *Anomodon snyderi*.

Leidy, Joseph—Continued. 1857 A

Notices of remains of extinct vertebrated animals discovered by Prof. E. Emmons.

Amer. Jour. Sci. (2), xxiii, pp. 271–272.

From Proc. Phila. Acad. Nat. Sci., viii, p. 255.

—— 1857 B

[Remarks on *Dromatherium*, *Clepsysaurus*, *Omosaurus*, etc.]

Proc. Acad. Nat. Sci. Phila., ix, pp. 149–150.

—— 1857 C

List of extinct *Vertebrata*, the remains of which have been discovered in the region of the Missouri River, with remarks on their geological age.

Proc. Acad. Nat. Sci. Phila., ix, pp. 89–91.

—— 1857 D

Rectification of the references of certain of the extinct mammalian genera of Nebraska.

Proc. Acad. Nat. Sci. Phila., ix, pp. 175–176.

—— 1857 E

[Remarks on *Mosasaurus*.]

Proc. Acad. Nat. Sci. Phila., ix, p. 176.

—— 1857 F

Notices of some remains of extinct fishes.

Proc. Acad. Nat. Sci. Phila., 1857, pp. 167–168.

—— 1857 G

Notice of remains of the walrus discovered on the coast of the United States.

Trans. Amer. Philos. Soc., xi, pp. 83–86, with pl. 4, figs. 1, 2, and pl. 5, fig. 1.

—— 1857 H

Descriptions of the remains of fishes from the Carboniferous limestone of Illinois and Missouri.

Trans. Amer. Philos. Soc. xi, pp. 87–90, pl. 5, figs. 2–29.

—— 1857 I

Remarks on *Saurocephalus* and its allies.

Trans. Amer. Philos. Soc., xi, pp. 91–95, with pl. vi, figs. 8–15.

—— 1857 J

Observations on the extinct peccary of North America; being a sequel to "A memoir on the extinct *Dicotylinæ* of America."

Trans. Amer. Philos. Soc., xi, pp. 97–105, with pl. vi, figs. 2–7.

Leidy, Joseph—Continued. 1857 K

Remarks on the structure of the feet of *Megalonyx*.

Trans. Amer. Philos. Soc., xi, pp. 107–108, pl. vi, fig. 1.

—— 1858 A

[Remarks concerning *Hadrosaurus*.]

Proc. Acad. Nat. Sci. Phila., 1858, pp. 215–218.

—— 1858 B

[Descriptions of *Mastodon mirificus* and *Elephas imperator*.]

Proc. Acad. Nat. Sci. Phila., 1858, p. 10.

—— 1858 C

[Notice of fossil *Mammalia* from valley of Niobrara River.]

Proc. Acad. Nat. Sci. Phila., 1858, p. 11.

—— 1858 D

[Remarks on "*Mastodon longirostris*" and "*Tapirus mastodontoides*" of Harlan.]

Proc. Acad. Nat. Sci. Phila., 1858, p. 12.

—— 1858 E

Notice of remains of extinct *Vertebrata*, from the valley of the Niobrara River, collected during the exploring expedition of 1857, in Nebraska, under the command of Lieut. G. K. Warren, U. S. Top. Eng., by Dr. F. V. Hayden.

Proc. Acad. Nat. Sci. Phila., 1858, pp. 20–29.

—— 1858 F

[Description of *Procamelus robustus* and *P. gracilis*.]

Proc. Acad. Nat. Sci. Phila., 1858, p. 89.

—— 1859 A

Hadrosaurus foulkii, a new saurian from the Cretaceous of New Jersey, related to the Iguanodon.

Amer. Jour. Sci. (2), xxvii, pp. 266–270. From Proc. Phil. Acad., 1858, p. 218.

—— 1859 B

[Remarks on remains of some extinct *Vertebrata* in Territory of Nebraska.]

Proc. Amer. Philos. Soc., vii, pp. 10–11.

—— 1859 C

[Descriptions of *Xystracanthus arcuatus* and *Cladodus occidentalis*."]

Proc. Acad. Nat. Sci. Phila., 1859, p. 3.

—— 1859 D

Synonymy of the American *Mosasaurus*.

Proc. Acad. Nat. Sci. Phila., 1859, pp. 91–92.

Preceded by remarks on mastodon found in Honduras and on the genus *Mosasaurus*.

Leidy, Joseph—Continued. 1859 E

[Remarks on fossil vertebrates found near Phœnixville, Pa., including new genus and species, *Eurydorus serridens*.]

Proc. Acad. Nat. Sci. Phila., 1859, p. 110.

—— 1859 F

[On the occurrence of *Ursus americanus* in association with bones of *Mastodon*, *Megalonyx*, etc.]

Proc. Acad. Nat. Sci. Phila., 1859, p. 111.

—— 1859 G

[Remarks on *Dromatherium sylvestre* and *Ontocetus emmonsi*.]

Proc. Acad. Nat. Sci. Phila., 1859, p. 162.

—— 1859 H

[Remarks on finding antler of reindeer at Sing Sing, N. Y.]

Proc. Acad. Nat. Sci. Phila., 1859, p. 194.

—— 1859 I

Remarks on fossils from Bethany, Va.; and also from the Green-sand, Monmouth County, N. J.

Proc. Acad. Nat. Sci. Phila., xi, p. 110.

No descriptions are given and no species are named.

—— 1860 A

Extinct *Vertebrata* from the Judith River and great Lignite formations of Nebraska.

Trans. Amer. Philos. Soc., xi, pp. 139–154, with pls. viii–xi.

—— 1860 B

Description of vertebrate fossils.

Holmes's Post-pliocene Fossils of South Carolina, pp. 99–122, with pls. xv–xxviii.

—— 1860 C

Skull of extinct peccary.

Proc. Acad. Nat. Sci. Phila., 1860, p. 416.

This refers to the species found in Gibson County, Ind., and afterwards called *Dicotyles nasutus*.

—— 1862 A

Observations upon the mammalian remains found in the crevices of the lead-bearing rocks at Galena, Ill.

J. D. Whitney's Report of a Geolog. Surv. of the Upper Mississippi lead region, p. 423.

—— 1865 A

Memoir on the extinct reptiles of the Cretaceous formations of the United States.

Smithsonian Contributions to Knowledge, xiv, article vi, pp. 1–135, pls. i–xx.

Reviewed in the Geol. Magazine, vol. v, 1868, p. 432.

Leidy, Joseph—Continued. 1865 B

[Descriptions of *Rhinoceros meridianus* and *R. hesperius.*]

Proc. Acad. Nat. Sci. Phila., 1865, pp. 176–177.

—— 1865 C

Bones and teeth of horses from California and Oregon.

Proc. Acad. Nat. Sci. Phila., 1865, p. 94.

Describes *Equus occidentalis* Leidy.

—— 1865 D

Brief review of a memoir on the Cretaceous reptiles of the United States, published in the fourteenth volume of the Smithsonian Contributions to Knowledge.

Annual Rep. Board Regents Smithsonian Inst. for 1864, pp. 66–73.

This is a review of the same author's memoir referred to in the title, Leidy, J. 1865 A.

—— 1866 A

Drepanodon (*Machairodus*) *occidentalis.*

Proc. Acad. Nat. Sci. Phila., 1866, p. 345.

This carnivore from White River is named, but not described.

—— 1866 B

Remarks on fossils presented.

Proc. Acad. Nat. Sci. Phila., xviii, p. 237.

Remarks on Harlan's *Scolopax* and on bird tibia from Nebraska.

—— 1866 C

Remarks on a phalanx of an extinct reptile.

Proc. Acad. Nat. Sci. Phila., xviii, p. 9.

Reference made to a reptilian phalanx from Columbus, Miss. Description given, but no name. May belong to *Hadrosaurus.*

—— 1867 A

[Remarks on a skull of *Bison antiquus* from California.]

Proc. Acad. Nat. Sci. Phila., 1867, p. 85.

—— 1867 B

[Remarks on fossil skull of *Geomys bursarius.*]

Proc. Acad. Nat. Sci. Phila., 1867, p. 97.

—— 1867 C

[Remarks on a skull of *Castoroides ohioensis*, found near Charleston, Ill.]

Proc. Acad. Nat. Sci. Phila., 1867, pp. 97–98.

—— 1867 D

[Remarks on *Agriochœrus latifrons*, *Hippopotamus*, and *Mastodon.*]

Proc. Acad. Nat. Sci. Phila., 1867, p. 32.

The name *Agriochœrus latifrons* is given, but there is no description.

Leidy, Joseph—Continued. 1868 A

Notice of some vertebrate remains from Hardin County, Tex.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 174–176.

—— 1868 B

Indications of an *Elotherium* in California.

Proc. Acad. Nat. Sci. Phila., 1868, p. 177.

Describes *Elotherium superbum.*

—— 1868 C

Notice of some reptilian remains from Nevada.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 177–178.

—— 1868 D

Notice of some remains of horses.

Proc. Acad. Nat. Sci. Phila., 1868, p. 195.

—— 1868 E

Notice of some extinct cetaceans.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 196–197.

—— 1868 F

Remarks on a jaw fragment of *Megalosaurus.*

Proc. Acad. Nat. Sci. Phila., 1868, pp. 197–200.

—— 1868 G

Remarks on *Conosaurus* of Gibbes.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 200–202.

—— 1868 H

Notice of American species of *Ptychodus.*

Proc. Acad. Nat. Sci. Phila., 1868, pp. 205–208.

—— 1868 I

Notice of some remains of extinct pachyderms.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 230–233.

—— 1868 J

Notice of some remains of extinct *Insectivora* from Dakota.

Proc. Acad. Nat. Sci. Phila., 1868, pp. 315–316.

—— 1869 A

The extinct mammalian fauna of Dakota and Nebraska, including an account of some allied forms from other localities, together with a synopsis of the mammalian remains of North America.

Jour. Acad. Nat. Sci. Phila. (2), vii, pp. 1–472, with 30 plates.

A synopsis of this memoir was published in Jour. de Zoologie, i, 1872, pp. 187–191; 500–508, with pls. x–xi; ii, pp. 541–545. A list of the described genera and species is included.

Leidy, Joseph—Continued. 1869 B

Notice of some extinct vertebrates from Wyoming and Dakota.

Proc. Acad. Nat. Sci. Phila., 1869, pp. 63–67.

—— 1870 A

On the *Elasmosaurus platyurus* of Cope.

Amer. Jour. Sci. (2), xlix, p. 392.

—— 1870 B

On *Discosaurus* and its allies.

Amer. Jour. Sci. (2), l, pp. 139–140.

Extracted from Proc. Phil. Acad., 1870, p. 18.

—— 1870 C

[Abstract of remarks made on *Elasmosaurus* at meetings of Acad. Nat. Sci. Phila., Mar. 8 and Apr. 5, 1870.]

Nature, ii, p. 249.

—— 1870 D

[Description of new genus and species, *Megacerops coloradensis*.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 1–2.

—— 1870 E

[Remarks on *Poicilopleuron valens*, *Clidastes intermedius*, *Leiodon proriger*, *Baptemys wyomingensis*, and *Emys stevensonianus*.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 3–5.

—— 1870 F

[Remarks on *Mylodon ? robustus*, from Central America, and on *Dromatherium sylvestre*.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 8–9.

—— 1870 G

[Remarks on *Elasmosaurus platyurus* and other fossil vertebrates.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 9–11.

—— 1870 H

[Remarks on ichthyodorulites and on certain fossil *Mammalia*.]

Proc. Acad. Nat. sci. Phila., 1870, pp. 12–13.

—— 1870 I

Remarks on *Discosaurus* and its allies.

Proc. Acad. Nat. Sci. Phila., 1870, pp. 18–22.

—— 1870 J

[Remarks on fossil vertebrates.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 66–68.

—— 1870 K

[Remarks on *Elephas americanus* and *Bos americanus* from Kansas and on new cyprinoid fishes from the Rocky Mountain region.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 69–71.

—— 1870 L

[Remarks on jaw of *Ovibos cavifrons*.]

Proc. Acad. Nat. Sci. Phila., 1870, p. 73.

Leidy, Joseph—Continued. 1870 M

[Remarks on *Mastodon americanus*, etc.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 96–99.

—— 1870 N

[Description of *Crocodilus elliotti*.]

Proc. Acad. Nat. Sci. Phila., 1870, p. 100.

—— 1870 O

[Remarks on a collection of fossils from the western Territories.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 109–110.

—— 1870 P

[Remarks on a collection of fossils from Dalles City, Oreg.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 111–113.

—— 1870 Q

[Descriptions of *Palæosyops paludosus*, *Microsus cuspidatus*, and *Notharctos tenebrosus*.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 111–114.

—— 1870 R

[Description of *Graphiodon vinearis* and remarks on *Crocodilus elliotti*.]

Proc. Acad. Nat. Sci. Phila., 1870, p. 122.

—— 1870 S

[Descriptions of *Emys jeanesi*, *E. haydeni*, *Baëna arenosa*, and *Saniwa ensidens*.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 123–124.

—— 1870 T

[Remarks on a collection of fossils from Table Mountain, Cal.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 125–127.

—— 1870 U

[Description of *Nothosaurops occiduus*.]

Proc. Acad. Nat. Sci. Phila., 1870, p. 74.

—— 1870 V

On fossil bones from Dakota and Nebraska.

Proc. Acad. Nat. Sci. Phila., 1870, pp. 65–66.

Describes a radius and tibia of some undetermined rhinoceros, and records finding of a bone probably belonging to *Ælurodon ferox*.

—— 1870 W

Remarks on Professor Owen's paper on fossil equines from Central and South America.

Proc. Acad. Nat. Sci. Phila., 1870, pp. 126–127.

Contains a list of species of *Protohippus*.

—— 1871 A

Notes on the American mastodon and other fossils.

Amer. Jour. Sci. (3), i, pp. 63–65.

Extracted from Proc. Acad. Nat. Sci. Phila. 1870, pp. 96–99.

Leidy, Joseph—Continued. 1871 B

Remarks on fossil vertebrates from Wyoming.

Amer. Jour. Sci. (3), ii, pp. 372-373.
Extracted from Proc. Acad. Nat. Sci. Phila., Aug. 8, 1871.

—— 1871 C

Report on the vertebrate fossils of the Tertiary formations of the West.

U. S. Geol. Surv. of Wyoming and portions of contiguous Territories, 2d (4th) annual report, F. V. Hayden, U. S. Geologist, pp. 340-370.

—— 1871 D

[Remarks on a collection of fossils from California.]

Proc. Acad. Nat. Sci. Phila., 1871, p. 50.

—— 1871 E

[Remarks on extinct turtles from Wyoming Territory, *Anosteira ornata* and *Hybemys arenarius*.]

Proc. Acad. Nat. Sci. Phila., 1871, pp. 102-103.

—— 1871 F

[Remarks on *Mastodon* and *Equus* from N. Carolina, and on extinct mammals from Wyoming.]

Proc. Acad. Nat. Sci. Phila., 1871, pp. 113-116.

—— 1871 G

[Remarks on remains of *Palæosyops*.]

Proc. Acad. Nat. Sci. Phila., 1871, p. 118.

—— 1871 H

Remarks on a fossil *Testudo* from Wyoming and on supposed fossil turtle eggs.

Proc. Acad. Nat. Sci. Phila., 1871, pp. 154-155.

—— 1871 I

Remarks on donation of fossils from Wyoming.

Proc. Acad. Nat. Sci. Phila., 1871, p. 197.

—— 1871 J

Remarks on *Mastodon*, etc., of California; and note on *Anchitherium*.

Proc. Acad. Nat. Sci. Phila., 1871, pp. 198-199.

—— 1871 K

Remarks on fossil vertebrates from Wyoming.

Proc. Acad. Nat. Sci. Phila., 1871, pp. 228-229.
See Amer. Naturalist, v, pp. 664-666.

—— 1871 L

Notice of some extinct rodents.

Proc. Acad. Nat. Sci. Phila., 1871, pp. 230-232.

—— 1871 M

Remarks on fossils from Oregon.

Proc. Acad. Nat. Sci. Phila., 1871, pp. 247-248.

Leidy, Joseph—Continued. 1872 A

On some new species of fossil *Mammalia* from Wyoming.

Amer. Jour. Sci. (3), iv, pp. 239-240.
From Proc. Acad. Nat. Sci. Phila. Same as Leidy, 1872 G.

—— 1872 B

On the fossil vertebrates of the early Tertiary formation of Wyoming.

U. S. Geol. Surv. of Montana and portions of adjacent Territories; F. V. Hayden, U. S. Geologist, Washington, D. C., 1872, pp. 353-372.

—— 1872 C

Remarks on fossils from Wyoming.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 19-21.

—— 1872 D

Remarks on some extinct mammals.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 37-38.

—— 1872 E

Remarks on some extinct vertebrates.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 38-40.
Descriptions given of *Felis augustus*, *Oligosimus grandævus*, and *Tylosteus ornatus*.

—— 1872 F

Remarks on fossil shark teeth.

Proc. Acad. Nat. Sci. Phila., 1872, p. 166.

—— 1872 G

On some new species of *Mammalia* from Wyoming.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 167-169.

—— 1872 H

Remarks on fossil mammals from Wyoming.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 240-242.

—— 1872 I

Notice of donation of fossils, etc., from Wyoming.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 267-268.

—— 1872 J

Remarks on fossils from Wyoming.

Proc. Acad. Nat. Sci. Phila., 1872, p. 277.
Remarks on *Palæosyops junior*, *Uintacyon edax*, *U. vorax*, *Chameleo pristinus*.

—— 1872 K

Remarks on *Mastodon* from New Mexico.

Proc. Acad. Nat. Sci. Phila., 1872, p. 143.

—— 1872 L

On a new genus of extinct turtles.

Proc. Acad. Nat. Sci. Phila., 1872, p. 162.
New genus *Chisternon* formed for *Baëna undata* Leidy.

—— 1872 M

On some remains of Cretaceous fishes.

Proc. Acad. Nat. Sci. Phila., 1872, pp. 162-163.
Descriptions given of *Otodus divaricatus*, *Oxyrhina extenta*, *Acrodus humilis*, and *Pycnodus faba*.

Leidy, Joseph—Continued. 1873 A

Notice of fossil *Vertebrata* from the Miocene of Virginia.

Amer. Jour. Sci. (3), v, pp. 311–312.

Extract from Proc. Acad. Nat. Sci. Phila., 1872.

—— 1873 B

Contributions to the extinct vertebrate fauna of the Western Territories.

Report of the U. S. Geological Survey of the Territories, F. V. Hayden, U. S. geologist in charge, i, pp. 14–358; pls. i–xxxvii. Washington, 1873.

—— 1873 C

Notice of fossil vertebrates from the Miocene of Virginia.

Proc. Acad. Nat. Sci. Phila., 1873, p. 15.

—— 1873 D

Notice of remains of fishes in the Bridger Tertiary formation of Wyoming.

Proc. Acad. Nat. Sci. Phila., 1873, pp. 97–99.

—— 1873 E

Remarks on the occurrence of an extinct hog in America.

Proc. Acad. Nat. Sci. Phila., 1873, p. 207.

—— 1873 F

Remarks on extinct mammals from California.

Proc. Acad. Nat. Sci. Phila., 1873, pp. 259–260.

Describes *Felis imperialis* and *Auchenia hesterna*.

—— 1873 G

Remarks on fossil elephant teeth.

Proc. Acad. Nat. Sci. Phila., 1873, pp. 416–417.

—— 1874 A

[Remarks on *Thespesius* and *Ischyrotherium*.]

Proc. Acad. Nat. Sci. Phila., 1874, pp. 74–75.

—— 1874 B

Notice of remains of *Titanotherium*.

Proc. Acad. Nat. Sci. Phila., 1874, pp. 165–166.

—— 1874 C

Remarks on fossils presented.

Proc. Acad. Nat. Sci. Phila., 1874, pp. 223–224.

—— 1875 A

Remarks on elephant remains.

Proc. Acad. Nat. Sci. Phila., 1875, p. 121.

—— 1876 A

Remarks on fossils from the Ashley phosphate beds.

Proc. Acad. Nat. Sci. Phila., 1876, pp. 80–81.

Abstract in Amer. Jour. Sci. (3), xii, 222–223.

Leidy, Joseph—Continued. 1876 B

Fish remains of the Mesozoic red shales.

Amer. Jour. Sci. (3), xii, p. 223.

Extracted from Proc. Acad. Nat. Sci. Phila., 1876. Same as Leidy, 1876 D.

—— 1876 C

On *Petalodus*.

Proc. Acad. Nat. Sci. Phila., 1876, p. 9.

Form related to *P. linguifer* found apparently in Green-sand marl.

—— 1876 D

Fish remains of the Mesozoic red shales.

Proc. Acad. Nat. Sci. Phila., 1876, p. 81.

Reprinted in Amer. Jour. Sci., xii, p. 223.

—— 1876 E

Remarks on fossils of the Ashley phosphate beds.

Proc. Acad. Nat. Sci. Phila., 1876, pp. 86–87.

—— 1876 F

Remarks on vertebrate fossils from the phosphate beds of South Carolina.

Proc. Acad. Nat. Sci. Phila., 1876 pp. 114–115.

—— 1877 A

Description of vertebrate remains, chiefly from the phosphate beds of South Carolina.

Jour. Acad Nat. Sci. Phila. (2), viii, pp. 209–261, pls. xxx–xxxiv.

—— 1879 A

Fossil remains of a caribou.

Proc. Acad. Nat. Sci. Phila., 1879, pp. 32–33.

—— 1879 B

Fossil foot tracks of the anthracite Coal-measures.

Proc. Acad. Nat. Sci. Phila., 1879, pp. 164–165.

—— 1880 A

Bone caves of Pennsylvania.

Proc. Acad. Nat. Sci. Phila., 1880, pp. 346–349.

—— 1881 A

Remarks on *Bathygnathus borealis*.

Jour. Acad. Nat. Sci. Phila. (2), viii, pp. 449–451.

—— 1882 A

On an extinct peccary.

Proc. Acad. Nat. Sci. Phila., 1882, pp. 301–302.

Describes *Platygonus vetus*.

—— 1884 A

Fossil bones from Louisiana.

Proc. Acad. Nat. Sci. Phila., 1884, p. 22.

—— 1884 B

Vertebrate fossils from Florida.

Proc. Acad. Nat. Sci. Phila., 1884, pp. 118–119

Leidy, Joseph—Continued. 1885 A
Rhinoceros and *Hippotherium* from Florida.
Proc. Acad. Nat. Sci. Phila., 1885, pp. 32–33.

—— 1885 B
Remarks on *Mylodon*.
Proc. Acad. Nat. Sci. Phila., 1885, pp. 49–51, with 6 figs. in the text.

—— 1886 A
An extinct boar from Florida.
Proc. Acad. Nat. Sci. Phila., 1886, pp. 37–38, with 2 figs. in the text.

—— 1886 B
Mastodon and llama from Florida.
Proc. Acad. Nat. Sci. Phila., 1886, pp. 11–12.
A notice of this paper, together with a note by Professor Cope, is found in Amer. Naturalist, 1886, xx, p. 755.

—— 1886 C
Caries in the mastodon.
Proc. Acad. Nat. Sci. Phila., 1886, p. 38.

—— 1887 A
Fossil bones from Florida.
Proc. Acad. Nat. Sci. Phila., 1887, pp. 309–310.

—— 1888 A
On a fossil of the puma.
Proc. Acad. Nat. Sci. Phila., 1888, pp. 9–10.

—— 1888 B
Toxodon and other remains from Nicaragua, Central America.
Proc. Acad. Nat. Sci. Phila., 1888, pp. 275–277, with text figs.

—— 1889 A
The saber-tooth tiger of Florida.
Proc. Acad. Nat. Sci. Phila., 1889, pp. 29–31.
Describes *Drepanodon floridanus*, and notes occurrence of *Auchenia minor*.

—— 1889 B
Fossil vertebrates from Florida.
Proc. Acad. Nat. Sci. Phila., 1889, pp. 96–97.

—— 1889 C
Notice of some fossil human bones.
Trans. Wagner Free Institute Sci., Phila., ii, pp. 9–12.
Contains a notice of the finding of some human bones in Florida, and also some bones of *Bison latifrons*.

—— 1889 D
Description of mammalian remains from a rock crevice in Florida.
Trans. Wagner Free Institute Sci., Phila., ii, pp. 13–17, with pl. iii, figs. 1, 5–9.

—— 1889 E
Description of vertebrate remains from Peace Creek, Florida.
Trans. Wagner Free Institute Sci., Phila., ii, pp. 19–31, with pls. iv–viii.

Leidy, Joseph—Continued. 1889 F
Notice of some mammalian remains from the salt mine of Petite Anse, Louisiana.
Trans. Wagner Free Institute Sci., Phila., ii, pp. 33–40, with pl. v, figs. 1–4, and 9 figs. in the text.

—— 1889 G
On *Platygonus*, an extinct genus allied to the peccaries.
Trans. Wagner Free Institute Sci., Phila., ii, pp. 41–50, with pl. viii, fig. 1.

—— 1889 H
Notice and description of fossils in caves and crevices of the limestone rocks of Pennsylvania.
Ann. Report Geol. Surv. Penn. for 1887, pp. 1–20, with pls. i, ii.

—— 1890 A
Hippotherium and *Rhinoceros* from Florida.
Proc. Acad. Nat. Sci. Phila., 1890, pp. 182–183, with 1 fig. in the text.

—— 1890 B
Mastodon and capybara of South Carolina.
Proc. Acad. Nat. Sci. Phila., 1890, pp. 184–185.

—— 1890 C
Fossil vertebrates from Florida.
Proc. Acad. Nat. Sci. Phila., 1890, pp. 64–65.

—— 1892 A
[List of *Vertebrata* from the Pliocene beds of Florida.]
Bull. U. S. Geol. Surv., No. 84 (Correlation papers: Neocene), pp. 129–130.

Leidy, Joseph, and **Lucas**, Fred. A. 1896 A
Fossil vertebrates from the Alachua clays of Florida; by Joseph Leidy, M. D., LL. D.; edited by Frederic A. Lucas.
Trans. Wagner Free Institute Sci., Phila., iv, pp. vii–xiv, 15–61, with pls. i–xix.

Lemoine, Victor. 1878 A
Recherches sur les ossements fossiles des terrains tertiaires inférieurs des environs de Reims. I. Étude du genre *Arctocyon*.
Annales Sci. Naturelles, Zool. (6), viii, pp. 1–56, pls. 1–4.

—— 1880 A
Sur les ossements fossiles des terrains tertiaires inférieurs des environs de Reims.
Assoc. Française pour l'avancement des Sciences, 8e session, Montpellier, 1879, pp. 585–594.

Lemoine, Victor—Continued. 1882 A

Sur deux *Plagiaulax* tertiaires, recueillis aux environs de Reims.

Comptes rend. Acad. Sci. Paris, xcv, pp. 1009-1011.

—— 1882 B

Sur l'encéphale de l'*Arctocyon dueillii* et du *Pleuraspidotherium aumonieri*, mammifères de l'Éocène inférieur des environs de Reims.

Bull. Soc. Géol. France (3), x, pp. 328-333.

—— 1883 A

Étude sur le *Neoplagiaulax* de la faune Éocène inférieur des environs de Reims.

Bull. Soc. Géol. France (3), xi, pp. 249-271, with pls. v, vi.

—— 1884 A

Du Simœdosaure, reptile de la faune cernaysienne des environs de Reims.

Comptes rend. Acad. Sci. Paris, xcviii, pp. 697-699.

—— 1884 B

Sur les os de la tête et sur les diverses espèces du Simœdosaure, reptile de la faune cernaysienne des environs de Reims.

Comptes rend. Acad. Sci. Paris, xcviii, pp. 1011-1013.

—— 1885 A

Sur la présence du Simœdosaure dans les couches éocènes inférieures de Sézanne.

Bull. Soc. Géol. France (3), xiv, pp. 21-32, pls. iii-v.

—— 1885 B

Sur les analogies et les différences du genre Simœdosaure, de la faune cernaysienne des environs de Reims, avec le genre Champsosaure d'Erquelinnes.

Comptes rend. Acad. Sci. Paris, c, pp. 753-755.

—— 1890 A

Sur les rapports qui paraissent exister entre les mammifères crétacés d'Amerique et les mammifères de la faune cernaysienne des environs de Riems.

Comptes rend. Acad. Sci. Paris, cx, pp. 480-482.

See also Bull. Soc. Géol. France (3), xviii, pp. 321-324, pl. iii.

—— 1891 A

Étude d'ensemble sur les dents des mammifères fossiles des environs de Reims.

Bull. Soc. Géol. France (3), xix, pp. 263-290, with pls. x and xi.

Lemoine, Victor—Continued. 1893 A

Étude sur les os du pied des mammifères de la faune cernaysienne et sur quelques pièces osseusses nouvelles de cet horizon paléontologique.

Bull. Soc. Géol. France (3), xxi, pp. 353-368, pls. ix-xi.

Lenk, H.

See **Felix** and **Lenk**.

Lennox, T. H. 1886 A

The fossil sharks of the Devonian.

Proc. Canadian Institute (3), iii, pp. 120-121.

Makes statement of the finding of a fossil fin-spine, *Machæracanthus sulcatus*, at St. Marys, Ontario.

Lepsius, G. R. 1881 A

Halitherium schinzi, die fossile Sirene des Mainzer Beckens. Eine vergleichend-anatomische Studie.

Abhandl. mittelrhein geol. Vereins, i, pp. i-vi; 1-200; i-viii, with pls. i-x.

Contains numerous references to the literature of the *Trichechidæ*.

Lesley, J. P. 1889 A

A dictionary of the fossils of Pennsylvania and neighboring States named in reports and catalogues of the survey. Compiled for the convenience of the citizens of the State by J. P. Lesley, State geologist. 3,000 figures, mostly facsimile copies of those published by H. D. Rogers, Hall, Conrad, Vanuxem, Emmons, Logan, Dawson, Billings, Matthews, Hitchcock, Newberry, Meek, Collett, Worthen, Rominger, D. D. Owen, Cox, Lyon, Safford, Fontaine, Lesquereux, Walcott, Leidy, Cope, and others; and some new species drawn and described by G. B. Simpson.

Geol. Surv. of Pennsylvania, Report, P_4, 1889. Vol. i, pp. i-xiv; 1-437; with Errata, pp. i-xxxi, and list of publications, pp. 1-10. Vol. ii, pp. 439-914; with additions, corrections, synonyms, etc., pp. i-x.

—— 1890 A

[Same title as the preceding, of which it is the conclusion.]

Pp. 915-1283, with critical emendations, additions, synonyms, etc., pp. i-xiv.

The number of pages devoted to corrections of errors found in this work gives an indication of the unsatisfactory manner in which it has been compiled. The figures are usually poorly reproduced.

—— 1892 A

A summary description of the geology of Pennsylvania in three volumes,

Lesley, J. P.—Continued.

with a new geological map of the State, a map and list of bituminous mines, and many page plate illustrations. Vol. II, describing the Upper Silurian and Devonian formations. By J. P. Lesley, State geologist.

4to., pp. i-xxv; 722-1628.

The figures are usually much reduced and poor. The plates do not follow the order of their numbers.

—— 1895 A

[Same title as the preceding. Vol. III, part I, describing the Carboniferous formation.]

Pp. i-xix; 1629-2153, with pls. ccv-cccxcv. Part iii, describing the bituminous coal fields, E. V. d'Invilliers and the New Red of Bucks and Montgomery counties. Benjamin Lyman. Pp. i-xxiii; 2153-2638, with pls. cccxcvi-dcxi.

There being no descriptions in the above-mentioned work of the fossils figured, and many of the figures being very small and indistinct, not all are cited in this Catalogue.

Leuthardt, Franz. 1891 A

Ueber die Reduction der Fingerzahl bei Ungulaten.

Zoolog. Jahrbücher, System., v, pp. 93-146, with pls. i-xxiii.

Levy, Hugo. 1898 A

Berträge zur Kenntniss des Baues und der Entwicklung der Zähne bei den Reptilien.

Jenaische Zeitschr. Naturwiss., xxxii (n. s. xxv), pp. 313-346, with pl. xi.

Contains numerous citations of the literature of the subject.

Lewis, J. L. 1880 A

Fossil remains in southwest Missouri.

Kansas City Review of Science and Industry, iv, p. 207.

Mentions the finding of a tooth of a horse and a large tusk 30 feet below the surface, in Bates County, Mo.

Lewis, H. C. 1882 A

Evidences of the existence of preglacial man.

Proc. Acad. Nat. Sci. Phila., 1882, pp. 292-293.

Leydig, F. 1876 A

Über den Bau der Zehen bei Batrachiern und die Bedeutung des Fersenhöckers.

Morpholog. Jahrbuch, ii, pp. 165-196, with pls. viii-xi.

Lindahl, Josua. 1892 A

Description of a skull of *Megalonyx leidyi*, n. sp.

Trans. Amer. Philos. Soc., xvii, pp. 1-10, with pls. i-v.

Lindahl, Josua—Continued. 1897 A

Description of a Devonian ichthyodorulite, *Heteracanthus uddeni*, n. sp., from Buffalo, Iowa.

Jour. Cincinnati Soc. Nat. Hist., xix, pp. 95-98, with pl. vi.

Lindström, G. 1895 A

On the remains of a *Cyathaspis* from the Silurian strata of Gotland.

Bihang k. Svenska Vet.-Akad. Handlingar, xxi, Afd. iv, No. 3, pp. 1-15, with pls. i, ii.

Describes and figures the microscopic structure of the shields and scales of *Cyathaspis*.

Lippincott, James S. 1881 A

An address to the fossil bones in a private museum.

Amer. Naturalist, vol. xv, p. 37.

Reply to J. S. L., p. 38.

Lister, George. 1846 A

Letter to Jeffries Wyman on Koch's *Hydrarchos*.

Proc. Boston Soc. Nat. Hist., ii, pp. 94-95.

Written from Washington County, Ala.

Lockwood, Samuel. 1883 A

A *Mastodon americanus* in a beaver meadow.

Proc. Amer. Assoc. Adv. Sci., 31st meeting, Montreal, 1882, pp. 365-366.

—— 1886 A

The ancestry of *Nasua*.

Amer. Naturalist, xx, pp. 320-325.

Lönnberg, Einar. 1899 A

On some remains of "*Neomylodon listai*" Ameghino, brought home by the Swedish Expedition to Terra del Fuego, 1895-1897.

Svenska Exped. till. Magellansl., ii, No. 7, pp. 149-170, with pls. xii-xiv.

—— 1900 A

On the structure and anatomy of the musk ox (*Ovibos moschatus*).

Proc. Zool. Soc. Lond., 1900, pp. 686-718, with 10 figs. in the text.

Logan, W. E. 1863 A

Superficial geology of Canada.

Geol. Surv. Canada, 1863, pp. 886-930.

Lohest, Maximin. 1884 A

Recherches sur les poissons des terrains paléozoïques de Belgique. Poissons de l'ampélite alunifère, des genres *Campodus*, *Petrodus*, et *Xystracanthus*.

Annales Soc. Géol. Belgique, xi, pp. 295-325, pls. iii, iv.

—— 1888 A

Recherches sur les poissons des terrains paléozoïques de Belgique. Pois-

Lohest, Maximin.—Continued.

sons des Psammites du Condroz, Famennien supérieur.

Annales Soc. Géol. Belgique, xv, pp. 112-208, pls. i-xi.

—— 1890 A

De la découverte d'espèces américaines de poissons fossiles dans le Dévonien supérieur de Belgique.

Annales Soc. Géol. Belgique, xvi, Bull. pp. lvii-lix.

The finding of *Dinichthys pustulosus* and *D. terrilli* in Belgium is announced. The former name refers to *D. tuberculatus*, not to *D. pustulosus* Eastman.

Longhi, Paolo. 1899 A

Sopra i resti di un cranio di *Campsodelphis* fossile scoperto nella molassa miocenia del Bellunese.

Atti. Soc. Veneto-Trent. Sci. (2), iii, pp. 323-331, with pls. i-iii.

Treats of the genus *Champsodelphis*, with references to *Squalodon*.

Loomis, Frederic B. 1900 A

Die Anatomie und die Verwandtschaft der Ganoid-und Knochen-Fische aus der Kreide-Formation von Kansas, U. S. A.

Palæontographica xlvi, pp. 213-283, with pls. xix-xxvii, and 13 figs. in the text.

Lortet, L. 1892 A

Les reptiles fossiles du bassin du Rhone.

Arch. Mus. d'Hist. Nat. de Lyon, v, pp. 3-139, with pls. i-xii, and 10 figs. in the text.

In this extensive paper are described the genera *Idiochelys*, *Hydropelta*, *Eurysternum*, *Sauranodon*, *Homæosaurus*, *Euposaurus*, *Atoposaurus*, *Alligatorellus*, etc.

Lortet, Dr. L., and **Chantre,** E. 1879 A

Recherches sur les mastodontes et les faunes mammalogiques que les accompagnent.

Archives Muséum d'Histoire Naturelle de Lyon, ii, pp. 285-311, with pls. i-xvi.

Portion of "Études paléontologiques dans le bassin du Rhone."

Lucas, Frederick A. 1888 A

Great auk notes.

The Auk, v, pp. 278-283.

—— 1890 A

The expedition to Funk Island, with observations upon the history and anatomy of the great auk.

Ann. Rep. Smith. Inst.; U. S. Nat. Mus., for 1888, pp. 493-529, with pls. lxxii, lxxiii.

Presents also a list of papers relating to the great auk.

Lucas, Frederick A.—Cont'd. 1892 A

On *Carcharodon mortoni* Gibbes.

Proc. Biolog. Soc. of Washington, vii, pp. 151-152.

Shows that *C. mortoni* is a synonym of C. *megalodon*.

—— 1895 A

Skeletons of *Zeuglodon*.

Science (2), ii, pp. 42-43.

Refers to the finding of two skeletons by Mr. Chas. Schuchert, and makes some statements of facts about this animal.

—— 1895 B

Notes on the osteology of *Zeuglodon cetoides*.

Amer. Naturalist, xxix, pp. 745-746.

—— 1896 A

Contributions to the natural history of the Commander Islands. XI. The cranium of Pallas's cormorant.

Proc. U. S. Nat. Mus., xviii, pp. 717-719, with pls. xxxiv and xxxv.

Describes and figures the cranium of *Phalacrocorax perspicillatus*.

—— 1897 A

Fossil bison of North America.

Science (2), vi, p. 814.

Abstract of remarks made before Biological Soc. Washington.

—— 1898 A

Contributions to palæontology. 1. A new crocodile from the Trias of southern Utah. 2. A new species of *Dinictis* (*D. major*).

Amer. Jour. Sci. (4), vi, p. 399.

The crocodile above described is *Heterodontosuchus ganei*.

—— 1898 B

A new snake from the Eocene of Alabama.

Proc. U. S. Nat. Mus., xxi, pp. 637-638, with pls. xlv, xlvi.

This paper describes the new genus and species *Pterosphenus schucherti*.

—— 1898 C

Publications of American Museum of Natural History.

Science (2), viii, pp. 96-97.

Contains a reference to figure of model of *Megalosaurus* (*Lælaps*) *aquilunguis*.

—— 1898 D

The fossil bison of North America.

Science (2), viii, p. 678.

Abstract of remarks made before Biolog. Soc. Washington. New species *B. occidentalis* described.

Lucas, Frederick A.—Cont'd. 1899 A

The fossil bison of North America.

Proc. U. S. Nat. Mus., xxi, pp. 755–771, with pls. lxv-lxxxiv and 2 text figs.

Reviewed by Dr. J. A. Allen in Amer. Naturalist, xxxiii, pp. 665–666.

—— 1899 B

The characters of *Bison occidentalis*, the fossil bison of Kansas and Alaska.

Kansas Univ. Quart., viii, A, pp. 17–18, with pls. viii, ix.

—— 1899 C

The nomenclature of the hyoid in birds.

Science (2), ix, pp. 323–324, with 1 fig.

—— 1900 A

The truth about the mammoth.

McClure's Magazine, xiv, pp. 349–355, Feb., with 5 figs. in the text.

—— 1900 B

Characters and relations of *Gallinuloides*, a fossil gallinaceous bird from the Green River shales of Wyoming.

Bull. Mus. Comp. Zool. (Harvard), xxxvi, pp. 79–84, with pl. i.

Describes *Gallinuloides wyomingensis* Eastman.

—— 1900 C

Palæontological notes.

Science (2), xii, pp. 809–810.

Notes on *Thespesius*, and *Basilosaurus cetoides*.

—— 1900 D

A new rhinoceros, *Trigonias osborni*, from the Miocene of South Dakota.

Proc. U. S. Nat. Mus., xxiii, pp. 221–223, with 2 figs. in the text.

—— 1900 E

The pelvic girdle of *Zeuglodon*, *Basilosaurus cetoides* (Owen), with notes on other portions of the skeleton.

Proc. U. S. Nat. Mus., xxiii, pp. 327–331, with pls. v-vii.

—— 1900 F

A new fossil cyprinoid, *Leuciscus turneri*, from the Miocene of Nevada.

Proc. U. S. Nat. Mus., xxiii, pp. 333–334, with pl. viii.

See also **Leidy** and **Lucas**; **Stejneger** and **Lucas**.

Ludwig, Rudolph. 1877 A

Fossile Crocodiliden aus der Tertiarformationen des Mainzer Beckens.

Palæontographica, Suppl., iii, Lief. 4, 5; pp. 1–54, with pls. i-xvi.

Lütken, Chr. 1868 A

On *Xenacanthus* (*Orthacanthus*) *dechenii* Goldfuss.

Geol. Magazine (1), v, pp. 376–380.

A review of various papers by Professor Kner.

—— 1868 B

Professor Kner's Classification of the Ganoids.

Geol. Magazine (1), v, pp. 429–432.

—— 1873 A

Ueber die Begrenzung und Eintheilung der Ganoïden.

Palæontographica, xxii, pp. 1–54.

Lund, P. W. 1839 A

Un aperçu des espèces de mammifères fossiles découvertés au Brésil.

Comptes rend. Acad. Sci. Paris, viii, pp. 570–577.

For a translation of this communication see Annals Nat. Hist. 1839, iii, pp. 210–218.

—— 1839 B

Coup d'œil sur les espèces etientes de mammifères du Brésil; extrait de quelques mémoires présentés à l'Académie royale des Sciences du Copenhagen.

Annales Sci. Naturelles (2), xi, pp. 214–234.

For abstract see Neues Jahrb. Min., 1840, pp. 120–125.

—— 1841 A

Blik paa Brasiliens Dyreverden för sidste Jordomvæltning.

K. Danske Vidensk. Selskabs Afhandl, viii, pp. 27–57; 61–86; 217–296, with pls. xiv-xxvii.

—— 1842 A

Blik paa Brasiliens Dyreverden för sidste Jordomvæltning.

K. Danske Vidensk. Selskabs Afhandl, ix, pp. 137–208, with pls. xxviii-xxxviii.

See also Annales Sci. Naturelles, 1839 (2), xi, pp. 214–234.

Lydekker, R. 1880 A

Indian Tertiary and Post-tertiary *Vertebrata*. Siwalik and Narbada *Proboscidia*. Family i, *Dinotheridæ*. Family ii, *Elephantidæ*.

Palæont. Indica (10), i, pp. 182–294, with pls. xxix-xlvi.

—— 1881 A

Indian Tertiary and Post-tertiary *Vertebrata*. Siwalik *Rhinocerotidæ*.

Palæont. Indica (10), ii, pp. 1–62, with pls. i-x.

To this paper is appended a list of the principal works that have been published on the family of *Rhinocerotidæ*.

Lydekker, R.—Continued. 1882 A

Indian Tertiary and Post-tertiary *Vertebrata*. Siwalik and Narbada *Equidæ*.

Palæont. Indica (10), ii, pp. 67-98, with pls. xi-xv.

Appended is a list of the principal works and memoirs on the osteology and palæontology of *Equus* and *Hippotherium*.

—— 1883 A

Indian Tertiary and Post-tertiary *Vertebrata*. Siwalik selenodont *Suina*, etc.

Palæont. Indica (10), ii, pp. 143-177, with pls. xxiii-xxv.

Besides the descriptions of the Indian species, there is a classification of the *Bunodontia* and the *Selenodontia*, a list of the species of *Hyopotamus*, and references to memoirs relating to the *Anthracotheriidæ*, *Oreodontidæ*, etc.

—— 1884 A

Indian Tertiary and Post-tertiary *Vertebrata*. Siwalik and Narbada *Carnivora*.

Palæont. Indica (10), ii, pp. 178-355, with pls. xxvi-xlv.

Contains important discussions of the genera of *Carnivora*, with lists of species, and references to authorities.

—— 1884 B

Indian Tertiary and Post-tertiary *Vertebrata*. Additional Siwalik *Perissodactyla* and *Proboscidia*.

Palæont. Indica (10), iii, pp. xi-xxiv; 1-34, with pls. i-v.

Contains discussion of the teeth of elephants and mastodons.

—— 1884 C

Indian Tertiary and Post-tertiary *Vertebrata*. Siwalik and Narbada bunodont *Suina*.

Palæont. Indica (10), iii, pp. 35-104, with pls. vi-xii.

Treats especially of the genera *Sus* and *Hyotherium*, and has appended a list of memoirs.

—— 1885 A

Note on the zoological position of the genus *Microchœrus*, Wood, and its apparent identity with *Hyopsodus*, Leidy.

Quart. Jour. Geol. Soc., xli, pp. 529-531, with 1 woodcut.

—— 1885 B

Catalogue of the fossil *Mammalia* in the British Museum. Part I. Containing the orders *Primates*, *Chiroptera*, *Insectivora*, *Carnivora*, and *Rodentia*.

Pp. i-xxx; 1-268, with 33 figs. in the text. London, 1885.

Lydekker, R.—Continued. 1885 C

Catalogue of the fossil *Mammalia* in the British Museum. Part II. Containing the order *Ungulata*, suborder *Artiodactyla*.

Pp. i-xxii; 1-324, with 39 figs. in thc text. London, 1885.

—— 1885 D

Note on the generic identity of the genus *Esthonyx*, Cope, with *Platychærops*, Charlesworth (=*Miolophus*, Owen).

Geol. Magazine (3), ii, pp. 360-361.

—— 1885 E

Memoirs on extinct North American vertebrates, by Prof. E. D. Cope.

Geol. Magazine (3), ii, pp. 468-474.

A review of several of Professor Cope's papers.

—— 1886 A

Catalogue of the fossil *Mammalia* in the British Museum. Part III. Containing the order *Ungulata*, suborders *Perissodactyla*, *Toxodontia*, *Condylarthra*, and *Amblypoda*.

Pp. i-xvi; 1-186, with 30 figs. in text. London, 1886.

—— 1886 B

Catalogue of the fossil *Mammalia* in the British Museum. Part IV. Containing the order *Ungulata*, suborder *Proboscidea*.

Pp. i-xxiv; 1-235, with 32 figs. in the text. London, 1886.

—— 1886 C

M. Dollo on the evolution of the teeth of herbivorous *Dinosauria*.

Geol. Magazine (3), iii, pp. 274-276, with 10 figs. in the text.

—— 1886 D

Dr. Max Schlosser on the *Ungulata*.

Geolog. Magazine (3), iii, pp. 326-328.

A review of Dr. Schlosser's paper in the Morphologisches Jahrbuch, xii, pp. 1-136.

—— 1886 E

Indian Tertiary and Post-tertiary *Vertebrata*. Siwalik *Crocodilia*, *Lacertilia*, and *Ophidia*.

Palæont. Indica (10), iii, pp. 209-240, with pls. xxviii-xxxv.

—— 1887 A

Catalogue of the fossil *Mammalia* in the British Museum. Part V. Containing the group *Tillodontia*, the orders *Sirenia*, *Cetacea*, *Edentata*, *Marsupialia*, *Monotremata*, and Supplement.

Pp. i-xxxv; 1-345, with 55 figs. in the text. London, 1887.

Lydekker, R.—Continued. 1888 A

Note on a new Wealden Iguanodont and other dinosaurs.

Quart. Jour. Geol. Soc., xliv, pp. 46-61, with pl. iii and 3 figs. in the text.

—— 1888 B

Catalogue of the fossil *Reptilia* and *Amphibia* in the British Museum. Part I. Containing the orders *Ornithosauria*, *Crocodilia*, *Dinosauria*, *Squamata*, *Rhynchocephalia*, and *Proterosauria*.

Pp. i-xxviii; 1-309, with 69 figs. in the text. London, 1888.

—— 1888 C

Notes on Tertiary *Lacertilia* and *Ophidia*.

Geol. Magazine (3), v, pp. 110-113.

—— 1888 D

Note on the classification of the *Ichthyopterygia*.

Geol. Magazine (3), v, pp. 309-314.

—— 1888 E

British Museum Catalogue of fossil *Reptilia* and papers on the Enaliosaurians.

Geol. Magazine (3), v., pp. 451-453.

—— 1889 A

On a skull of the chelonian genus *Lytoloma*.

Proc. Zool. Soc. Lond., 1889, pp. 60-66, with pls. vi-vii.

—— 1889 B

On an apparently new species of *Hyracodontotherium*.

Proc. Zool. Soc. Lond., 1889, pp. 67-69, with 2 woodcuts.

Describes *H. filholi*, from central France.

—— 1889 C

On the remains and affinities of five genera of Mesozoic reptiles.

Quart, Jour. Geol. Soc., xlv, pp. 41-59, with 1 pl. and 9 text figs.

—— 1889 D

On remains of Eocene and Mesozoic *Chelonia* and a tooth of (?) *Ornithopsis*.

Quart. Jour. Geol. Soc., xlv, pp. 227-246, with pl. viii and 7 woodcuts in the text.

—— 1889 E

On certain chelonian remains from the Wealden and Purbeck.

Quart. Jour. Geol. Soc., xlv, pp. 511-518, with 4 figs. in the text.

—— 1889 F

Catalogue of the fossil *Reptilia* and *Amphibia* in the British Museum. Part II. Containing the orders *Ichthyopterygia* and *Sauropterygia*.

Pp. i-xxiii; 1-307, with 85 figs. in the text. London, 1889.

—— 1889 G

Catalogue of the fossil *Reptilia* and *Amphibia* in the British Museum. Part III. Containing the order *Chelonia*.

Pp. i-xviii; 1-239, with 53 figs. in the text. London, 1889.

—— 1889 H

On a Cœluroid dinosaur from the Wealden.

Geol. Magazine (3), vi, pp. 119-121.

—— 1889 I

On an ichthyosaurian paddle, showing the contour of the integuments.

The Geol. Magazine (3), vi, pp. 388-390, with 1 fig. in the text.

—— 1889 J

[Remarks on Professor Seeley's paper on *Ornithopsis*.]

Quart. Jour. Geol. Soc., xlv., pp. 396-397.

Believes that *Cetiosaurus* should yield to *Cardiodon*, and *Ornithopsis* to *Hoplosaurus* (*Oplosaurus*) or even *Pelorosaurus*.

—— 1889 K

Skeleton of *Phenacodus*.

Nature, xl, pp. 57-58, with 1 fig. in the text.

The figure is taken from Cope.

—— 1889 L

Notes on new and other dinosaurian remains.

Geol. Magazine (3), vi, pp. 352-356, with text figs. A-D.

Contains figures and description of *Arctosaurus osborni* Adams.

—— 1890 A

Catalogue of the fossil *Reptilia* and *Amphibia* in the British Museum. Part IV. Containing the orders *Anomodontia*, *Ecaudata*, *Caudata*, and *Labyrinthodontia;* and supplement.

Pp. i-xxiii, 1-295, with 66 figs. in the text. London, 1890.

—— 1890 B

On the remains of small sauropodous dinosaurs from the Wealden.

Quart. Jour. Geol. Soc. Lond., xlvi, pp. 182-184, with pl. ix and 1 text fig.

Regards the remains as belonging to *Pleurocœlus* Marsh.

—— 1891 A

Catalogue of the fossil birds in the British Museum.

Pp. i-xxvii, 1-368, with 75 figs. London, 1891.

Lydekker, R.—Continued. 1891 B

Professor Osborn on the molars of the *Perissodactyla*.

Geol. Magazine (3), viii, pp. 317-321, with 3 figs. in the text; p. 384.

—— 1891 C

On British fossil birds.

The Ibis (6), iii, pp. 381-410.

—— 1892 A

On a remarkable sirenian jaw from the Oligocene of Italy, and its bearing on the evolution of the *Sirenia*.

Proc. Zool. Soc. Lond., 1892, pp. 77-83, with 2 woodcuts.

—— 1892 B

Recent advances in knowledge of the ichthyosaurian reptiles.

Natural Science, i, pp. 514-521, with 2 figs. in the text.

—— 1893 A

On a mammalian incisor from the Wealden of Hastings.

Quart. Jour. Geol. Soc. Lond., xlix, pp. 281-283, with figs. 1, 1a, 2, 2a.

—— 1893 B

Some recent restorations of dinosaurs.

Nature, xlviii, pp. 302-304, with 5 figs. in the text.

See, regarding this paper, O. C. Marsh, Nature, xlviii, p. 437.

—— 1893 C

On zeuglodont and other cetacean remains from the Tertiary of the Caucasus.

Proc. Zool. Soc. Lond., 1892, pp. 558-564, with pls. xxxvi-xxxviii.

—— 1893 D

Contributions to a knowledge of the fossil vertebrates of Argentina; I. The dinosaurs of Patagonia; II. Cetacean skulls from Patagonia; III. A study of extinct Argentine ungulates.

Anales del Museo de la Plata, ii, pp. 1-16, pls. i-v; pp. 1-13, pls. i-v; pp. 1-91, pls. i-xxxii.

—— 1893 E

The restoration of extinct animals.

Natural Science, ii, pp. 135-143, with 2 text figs.

This is a review of H. N. Hutchinson's Extinct Monsters.

—— 1894 A

Contributions to a knowledge of the fossil vertebrates of Argentina. Part II. 1. Supplemental observations on Argentine ungulates. 2. The extinct edentates of Argentina. 3. On two extinct carnivores.

Anales del Museo de la Plata, iii, pp. i-vii; 1-118; 1-4; with pls. i, ii; i-lxi.

—— 1896 A

[Articles in Newton's Dictionary of Birds, 1893-1896.]

—— 1896 B

A geographical history of mammals.

8vo, pp. i-xii; 1-400, with 82 figs. in the text.

—— 1898 A

The deer of all lands. A history of the family *Cervidæ*, living and extinct.

4to, pp. i-xx; 1-329, with pls. i-xxiv and text figs. 1-80. London, 1898.

—— 1898 B

Wild oxen, sheep, and goats of all lands, living and extinct.

London, 1898. 4to, pp. i-xv; 1-318, with pls. i-xxvii and 61 figs. in the text.

—— 1900 A

The dental formula of the marsupial and placental *Carnivora*.

Proc. Zool. Soc. Lond., 1899, pp. 922-928, with pl. lxii.

See also **Flower** and **Lydekker**; **Thomas** and **Lydekker**.

Lyell, Charles. 1842 A

On the fossil footprints of birds and impressions of raindrops in the valley of the Connecticut.

Proc. Geol. Soc. Lond., iii, pp. 793-796.
No species described or figured.

—— 1843 A

On the fossil footprints of birds and impressions of raindrops in the valley of the Connecticut.

Amer. Jour. Sci., xlv, pp. 394-397.

—— 1843 B

On the geological position of the *Mastodon giganteum* and associated fossil remains at Bigbone Lick, Kentucky.

Ann. and Mag. Nat. Hist., xii, pp. 125-128.

See also Proc. Geol. Soc. Lond., iv, pp. 36-39, 1843; Amer. Jour. Sci., 1844, xlvi, pp. 320-323.

—— 1843 C

On the Tertiary strata of the island of Martha's Vineyard in Massachusetts.

Proc. Geol. Soc. Lond., iv, pp. 31-33.
Also in Amer. Jour. Sci. (2), xlvi, pp. 318-320.

Lyell, Charles—Continued. 1845 A

On the Miocene Tertiary strata of Maryland, Virginia, and of North and South Carolina.

Quart. Jour. Geol. Soc. Lond., i, pp. 413–429.

Refers to the occurrence of the remains of various species of sharks and of tooth of *Mastodon longirostris.*

—— 1846 A

On the evidence of fossil footprints of a quadruped allied to *Cheirotherium* in the Coal strata of Pennsylvania.

Amer. Jour. Sci. (2), ii, pp. 25–29.

—— 1846 B

On footmarks discovered in the Coal measures of Pennsylvania.

Quart. Jour. Geol. Soc. Lond., ii, pp. 417–420.

No species are named.

—— 1846 C

On the newer deposits of the Southern States of North America.

Quart. Jour. Geol. Soc. Lond., ii, pp. 405–410.

Refers to the finding of *Zeuglodon* bones in Alabama.

—— 1847 A

On the alleged coexistence of man and the megatherium.

Amer. Jour. Sci. (2), iii, pp. 267–269.

—— 1847 B

On the structure and probable age of the coal field of the James River, near Richmond, Va.

Quart. Jour. Geol. Soc. Lond., iii, pp. 261–280, with pls. viii and ix.

—— 1848 A

On the fossil footmarks of a reptile in the Coal formation of the Allegheny Mountains.

Athenæum, 1848, pp. 166–167.

—— 1853 A

On the discovery of some fossil reptilean remains, and a land shell in the interior of an erect fossil tree in the Coal-measures of Nova Scotia, with remarks on the origin of coal fields, and the time required for their formation.

Amer. Jour. Sci. (2), xvi, pp. 33–41.

Taken from Proc. Royal Soc. of Great Britain, 1853.

Lyell, Chas., and **Dawson,** J. W. 1853 A

On the remains of a reptile (*Dendrerpeton acadianum,* Wyman and Owen), and of a land shell discovered in the interior of an erect fossil tree in the coal measures of Nova Scotia.

Quart. Jour. Geol. Soc. Lond., ix, pp. 58–63, with pls. ii–iv.

Maack, G. A. 1865 A

Palæontologische Untersuchungen über noch unbekannte Lophiodonfossilien von Heidenheim am Hahnenkamme in Mittelfranken nebst einer kritischen Betrachtung sämmtlicher bis jetzt bekannten Species des Genus *Lophiodon.*

8vo, Leipzig, 1865, pp. 1–75, with pls. i–xiv.

—— 1869 A

Die bis jetzt bekannten fossilen Schildkröten und die im oberen Jura bei Kelheim (Bayern) und Hannover neu aufgefundenen ältesten Arten derselben.

Palæontographica xviii, 193–338, pls. xxxiii–xl.

For review of this work and various corrections see Cope, E. D., 1870 T.

McAdams, William. 1884 A

A new vertebrate from the St. Louis limestone.

Proc. Amer. Assoc. Adv. Sci., 32d meeting, Minneapolis, 1883, p. 269.

Abstract; no generic or specific name.

McCallie, S. W. 1892 A

Remains of the mastodon recently found in Tennessee.

Science, xx, p. 333.

McCoy, Frederick. 1848 A

On some new fossil fish of the Carboniferous period.

Ann. and Mag. Nat. Hist. (2), ii, pp. 1–10; 115–134.

—— 1848 B

Reply to Sir Philip Egerton's letter on the *Placodermi.*

Ann. and Mag. Nat. Hist. (2), ii, pp. 277–280.

—— 1848 C

On some new ichthyolites from the Scotch Old Red sandstone.

Ann. and Mag. Nat. Hist. (2), ii, pp. 297–312, with text figs.

—— 1853 A

On the structure of certain fossil fishes found in the Old Red sandstone of the north of Scotland.

Report Brit. Assoc. Adv. Sci., 22d meeting, Belfast, 1852, p. 55.

Discusses structure of *Holoptychius.*

—— 1853 B

On the mode of succession of the teeth in *Cochliodus.*

Report Brit. Assoc. Adv. Sci., 22d meeting, Belfast, 1852, p. 55.

McCoy, Frederick—Continued. 1855 A

Description of the British palæozoic fossils in the Geological Museum of the University of Cambridge.

Pp. 1-661, with 26 pls., Cambridge, 1854.

The vertebrate fossils are described on pp. 575-644.

McGee, W. J. 1887 A

Ovibos cavifrons from the Loess of Iowa.

Amer. Jour. Sci. (3), xxxiv, pp. 217-220.

Mackie, S. J. 1863 A

On a new species of *Hybodus* from the lower Chalk.

The Geologist, vi, pp. 241-246, pl. xiii.

Discusses the genus *Hybodus*.

—— 1863 B

Cestraciont fishes of the Chalk.

The Geologist, vi, pp. 161-163, with pl. ix.

Contains list of species of *Ptychodus* in British Museum.

Mackintosh, H. W. 1878 A

Note on the microscopic structure of the scale of *Amia calva*.

Proc. Roy. Dublin Soc., i, pp. 93-95, with pls. i, ii.

McMurrich, J. P. 1884 A

On the osteology of *Amiurus catus* (L.) Gill.

Zoolog. Anzeiger, vii, pp. 296-299.

—— 1884 B

The osteology of *Amiurus catus* (L.) Gill.

Proc. Canadian Institute, ii, pp. 270-310, with pl. ii.

Madison (Bishop). 1806 A

The Mammoth, or American elephant.

Med. and Phys. Jour., London, xv, p. 486.

Shows that this animal was herbivorous.

Maggi, Leopoldo. 1898 A

Placche osteodermiche interparietali degli Stegocefali e rispondenti centri di ossificazione interparietali dell' uomo.

Rendiconti Reale Instituto Lombardo Sci. e Lett. (2), xxxi, pp. 211-228, with pl. i.

—— 1898 B

Omologie craniali fra Ittiosauri e feti dell' uomo e d'altri mammiferi. Richerche e considerazíoni relative all'ontogenia dei fossili.

Rendiconti Reale Instituto Lombardo Sci. e Lett. (2), xxxi, pp. 631-641, with pl. ii.

—— 1898 C

Il canale cranio-faringeo negli ittiosauri omologo a quello dell' uomo e d'altri mammiferi.

Rendiconti Reale Instituto Lombardo Sci. e Lett. (2), xxxi, pp. 761-771, with pl. iii.

Maggi, Leopoldo—Continued. 1898 D

Le ossa sovraorbitali nei mammiferi.

Rendiconti Reale Instituto Lombardo Sci. e Lett. (2), xxxi, pp. 1089-1099, with pl. iv.

—— 1898 E

Serie di ossicini del tegmen cranii in alcuni cani (*Canis*), e loro omologhi ed omotopi in alcuni Storioni (*Acipenser*).

Rendiconti Reale Instituto Lombardo Sci. e Lett. (2), xxxi, pp. 1473-1492, with pl. v.

Magnus, Hugo. 1869 A

Physiologisch-anatomische Untersuchungen über das Brustbein der Vögel.

Archiv Anat., Physiol. u. wissensch. Med., 1868, pp. 682-710, with pls. xvi, xvii.

Issued in January, 1869.

Major, C. J. Forsyth. 1873 A

Nagerüberreste aus Bohnerzen Suddeutschlands und der Schweiz.

Palæontographica, xxii, 75-130, pls. iii-vi.

Contains remarks on dentition of various North American genera of mammals.

—— 1877 A

Beiträge zur Geschichte der fossilen Pferde, insbesondere Italiens. Erster Theil.

Abhandl. schweizer. paläontolog. Gesellsch., iv, pp. 1-16, with 4 pls.

—— 1880 A

Beiträge zur Geschichte der fossilen Pferde, insbesondere Italiens. Zweiter Theil.

Abhandl. schweizer. paläontolog. Gesellsch., vii, pp. 1-154, with 3 double plates.

This is the continuation and conclusion of Major, C. J. F., 1877 A.

—— 1893 A

On some Miocene squirrels, with remarks on the dentition and classification of the *Sciurinæ*.

Proc. Zool. Soc. Lond., 1893, pp. 179-215, with pls. viii-xi.

—— 1899 A

On fossil and recent *Lagomorpha*.

Trans. Linn. Soc. Lond. (2), vii, pp. 433-520, with pls. xxxvi-xxxix.

Malmgren, A. J. 1864 A

Om tandbyggnaden hos Hvalrossen (*Odobænus rosmarus* L.) och tandombytet hos hans of ödda unge.

Overs. Vetensk.-Akad. Förhandl., xx, pp. 505-522, with pl. vii.

—— 1865 A

Ueber den Zahnbau des Walrosses (*Odobænus rosmarus* L.) und über den Zahnbau seines ungeborenen Junges.

Archiv Naturgesch., xxxi, i, pp. 182-202.

Translation of Malmgren, 1864 A.

Mandl, L. 1839 A

Recherches sur la structure intime des écailles des poissons.

Ann. Sci. Naturelles (2), Zool., xi, pp. 337-371, with pl. ix.

Männer, H. 1899 A

Beiträge zur Entwicklungsgeschichte der Wirbelsäule bei Reptilien.

Zeitschr. wissensch. Zool. lxvi, pp. 43-68, with pls. iv-vii.

Mantell, G. A. 1846 A

Description of footmarks and other imprints on a slab of New Red sandstone from Turners Falls, Mass., collected by Dr. James Deane, of Greenfield, United States.

Quart. Jour. Geol. Soc., ii, p. 38.

—— 1848 A

On the structure of the jaws and teeth of the Iguanodon.

Philos. Trans. Roy. Soc. Lond., pp. 183-202, pls. 16-19.

—— 1848 B

A brief notice of organic remains recently discovered in the Wealden formation.

Quart. Jour. Geol. Soc., v, pp. 37-43, with pl. iii.

Describes remains of *Iguanodon*.

—— 1849 A

Additional observations on the osteology of the *Iguanodon* and *Hylæosaurus*.

Philos. Trans. Roy. Soc. Lond., pp. 271-305, pls. 26-32.

This paper includes "Notes on the vertebral column of the Iguanodon," by A. G. Melville.

Marck, W. v. 1863 A

Fossile Fische, Krebse und Pflanzen aus dem Plattenkalk der jüngsten Kreide in Westphalen.

Palæontographica, xi, pp. 1-83, with pls. i-xiv.

Marcou, John B. 1887 A

Review of the progress of North American palæontology for the year 1886.

Amer. Naturalist, xxi, pp. 532-544.

—— 1888 A

Review of the progress of North American palæontology for the year 1887.

Amer. Naturalist, xxii, pp. 679-691.

Marcou, Jules. 1858 A

Geology of North America, with two reports on the prairies of Arkansas and Texas, the Rocky Mountains of New Mexico, and the Sierra Nevada of California, originally made for the United States Government.

Pp. i-vi, 1-144, with 7 pls. and 3 maps.

The original description of *Ptychodus whipplei* occurs on page 33.

Markert, F. 1896 A

Die Flossenstachelen von *Acanthias*. Ein Beitrag zur Kenntniss der Hartsubstanzgebilde der Elasmobranchier.

Zool. Jahrbücher, Abth. Anat. u. Ontol., ix, pp. 664-722, with pls. xlvi-xlix and text-figs. A-K.

Marsh, Dexter. 1848 A

Fossil footprints.

Amer. Jour. Sci. (2) vi, pp. 272-274.

No species are named.

Marsh, O. C. 1862 A

On the saurian vertebræ from Nova Scotia.

Amer. Jour. Sci. (2), xxxiii, p. 278.

Eosaurus acadianus; name, but no description.

—— 1862 B

Description of the remains of a new Enaliosaurian (*Eosaurus acadianus*) from the Coal formation of Nova Scotia.

Amer. Jour. Sci. (2), xxxiv, pp. 1-16, with pls. i, ii.

An abridgment of this description is found in Canadian Naturalist and Geologist, vol. vii, pp. 205-213.

—— 1863 A

Description of the remains of a new Enaliosaurian (*Eosaurus acadianus*) from the Coal formation of Nova Scotia.

Quart. Jour. Geol. Soc., xix, pp. 52-56.

Abstract of Marsh, 1862 B.

—— 1867 A

Discovery of additional *Mastodon* remains at Cohoes, N. Y.

Amer. Jour. Sci. (2), xliii, pp. 115-116.

—— 1868 A

Notice of a new and diminutive species of fossil horse (*Equus parvulus*) from the Tertiary of Nebraska.

Amer. Jour. Sci. (2), xlvi, pp. 374-375.

Reprinted in Ann. and Mag. Nat. Hist. (4), iii, pp. 95-96, 1869; Kosmos, Leipzig, iv, p. 346, 1869. Abstract in Neues Jahrb. Mineral., 1869, p. 767.

—— 1869 A

Notice of new reptilian remains from the Cretaceous of Brazil.

Amer. Jour. Sci. (2), xlvii, pp. 390-392.

Contains notice of *Thecocampsa squankensis*.

Reprinted in Ann. and Mag. Nat. Hist. (4), iii, pp. 442-444. Abstract in Neues Jahrb. Mineral, 1871, p. 112.

Marsh, O. C.—Continued. 1869 B

Notice of some new mosasauroid reptiles from the Green-sand of New Jersey.

Amer. Jour. Sci. (2), xlviii, pp. 392–397.

Abstract in Canadian Naturalist, iv, p. 331, and Geol. Magazine, vii, 1870, pp. 376–377.

—— 1869 C

Description of a new and gigantic fossil serpent (*Dinophis grandis*) from the Tertiary of New Jersey.

Amer. Jour. Sci. (2), xlviii, pp. 397–400.

Extract of this paper published in Amer. Naturalist, vol. iv, p. 254.

—— 1870 A

Notice of some fossil birds from the Cretaceous and Tertiary formations of the United States.

Amer. Jour. Sci. (2), xlix, pp. 205–217.

Abstracts in Geol. Magazine, vii, 1870, p. 318; Amer. Naturalist, iv, 1870, p. 310. Proc. Acad. Nat. Sci. Phila., xxii, 1870, pp. 5–6.

—— 1870 B

Note on the remains of fossil birds.

Amer. Jour. Sci. (2), xlix, p. 272.

—— 1870 C

Notice of a new species of gavial from the Eocene of New Jersey.

Amer. Jour. Sci. (2), l, pp. 97–99.

Reprinted in Geol. Magazine, vii, p. 427, 1870.

—— 1870 D

Discovery of the Mauvaises Terres formation in Colorado.

Amer. Jour. Sci. (2), l, p. 292.

Reprinted in Canadian Naturalist, v, p. 240, 1871.

—— 1870 E

Notice of some new Tertiary and Cretaceous fishes.

Proc. Amer. Assoc. Adv. Sci., 18th meeting, Salem, 1869, pp. 227–230.

Abstract describing briefly *Histiophorus parvulus*, *Embalorhynchus kinnei*, *Phyllodus elegans*, *P. curvidens*, *Myliobates bisulcus*, *Dipristis meirsii*, *Enchodus semistriatus*.

—— 1870 F

[Remarks on *Hadrosaurus minor*, *Mosasaurus crassidens*, *Liodon laticaudus*, *Baptosaurus*, and *Rhinoceros matutinus*.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 2–3.

—— 1870 G

[Remarks on *Laornis edvardsianus*, *Palæotringa littoralis*, *P. vetus*, *Telmatornis priscus*, *T. affinis*, *Grus haydeni*, and *Puffinus conradii*.]

Proc. Acad. Nat. Sci. Phila., 1870, pp. 5–6.

Names, but no descriptions.

Marsh, O. C.—Continued. 1870 H

New fossil turkey.

Amer. Naturalist, iv, p. 317.

Notice of finding of *Meleagris altus*.

—— 1870 I

Announcement of discovery of *Meleagrus altus* and of *Dicotyles antiquus*.

Proc. Acad. Nat. Sci. Phila., 1870, p. 11.

No descriptions are furnished.

—— 1871 A

Description of some new fossil serpents, from the Tertiary deposits of Wyoming.

Amer. Jour. Sci. (3), i, pp. 322–329.

—— 1871 B

Notice of some new fossil reptiles from the Cretaceous and Tertiary formations.

Amer. Jour. Sci. (3), i, pp. 447–459.

Reprinted in Boll. R. Com. Geol. d'Italia, iii, pp. 278–283, 1872. See also Kosmos, vi, pp. 476–479; Pop. Sci. Rev., London, 1871, p. 436, and Neues Jahrb. Mineral, 1871, p. 890.

—— 1871 C

Note on a new and gigantic species of pterodactyle.

Amer. Jour. Sci. (3), i, p. 472.

—— 1871 D

Notice of some new fossil mammals from the Tertiary formation.

Am. Jour. Sci. (3), ii, pp. 35–44.

Reprinted in Boll. R. Com. Geol. d'Italia, iii, pp. 343–350, 1872.

—— 1871 E

Notice of some new fossil mammals and birds from the Tertiary formations of the West.

Amer. Jour. Sci. (3), ii, pp. 120–127.

Reprinted in Boll. R. Com. Geol. d'Italia, iii, pp. 350–353, 1872.

—— 1871 F

[Description of *Lophiodon validus*.]

Proc. Acad. Nat. Sci. Phila., 1871, p. 10.

—— 1871 G

[Communication on some new reptiles and fishes from the Cretaceous and Tertiary.]

Proc. Acad. Nat. Sci. Phila., 1871, pp. 103–105.

—— 1872 A

Discovery of a remarkable fossil bird.

Amer. Jour. Sci. (3), iii, pp. 56–57.

Abstract in Nature, v, p. 348, 1872.

First announcement of *Hesperornis regalis*.

Marsh, O. C.—Continued. 1872 B

Discovery of additional remains of *Pterosauria*, with descriptions of two new species.

Amer. Jour. Sci. (3), iii, pp. 241-248.

Abstract in Nature, v, p. 151, 1872.

—— 1872 C

Discovery of the dermal scutes of mosasauroid reptiles.

Amer. Jour. Sci. (3), iii, pp. 290-292.

—— 1872 D

Notice of a new species of *Hadrosaurus*.

Amer. Jour. Sci. (3), iii, p. 301.

Describes *H. agilis*.

—— 1872 E

Preliminary description of *Hesperornis regalis*, with notices of four other new species of Cretaceous birds.

Amer. Jour. Sci. (3), iii, pp. 360-365.

Abstract in Nature, vi, pp. 90, 94. Reprinted in Ann. and Mag. Nat. Hist., (4), x, pp. 212-217; Boll. R. Com. Geol. d'Italia, iii, pp. 211-217, 1872.

—— 1872 F

On the structure of the skull and limbs in mosasauroid reptiles, with descriptions of new genera and species.

Amer. Jour. Sci. (3), iii, pp. 448-464, with 4 pls.

See Kosmos, vi, pp. 447-449; Jour. de Zoologie, ii, p. 538, for abstracts.

—— 1872 G

Preliminary description of new Tertiary mammals. Pt. I.

Amer. Jour. Sci. (3), iv, pp. 122-128 and erratum on p. 504.

Abstract of this paper in Neues Jahrb. Mineral., 1872, pp. 990-991.

—— 1872 H

Note on *Rhinosaurus*.

Amer. Jour. Sci. (3), iv, p. 147.

Rhinosaurus changed to *Tylosaurus*.

—— 1872 I

Preliminary description of new Tertiary mammals. Parts II, III, and IV.

Amer. Jour. Sci. (3), iv, pp. 202-224.

Abstract in Neues Jahrb. Mineral., 1872, pp. 990-991. Advance copies of this paper are said to have been issued Aug. 7, 1872.

—— 1872 J

Notice of some new Tertiary and post-Tertiary birds.

Amer. Jour. Sci. (3), iv, pp. 256-262.

—— 1872 K

Preliminary description of new Tertiary reptiles. Parts I and II.

Amer. Jour. Sci. (3), iv, pp. 298-309.

Marsh, O. C.—Continued. 1872 L

Note on *Tinoceras anceps*.

Amer. Jour. Sci. (3), iv, p. 322.

Abstract in Pop Sci. Rev., London, 1873, p. 94.

—— 1872 M

Notice of a new species of *Tinoceras*.

Amer. Jour. Sci. (3), iv, p. 323.

—— 1872 N

Discovery of fossil *Quadrumana* in the Eocene of Wyoming.

Amer. Jour. Sci. (3), iv, pp. 405-406.

See also Geol. Magazine, x, 1873, p. 33, and Amer. Naturalist, vii, pp. 179-180.

—— 1872 O

Note on a new genus of carnivores, from the Tertiary of Wyoming.

Amer. Jour. Sci. (3), iv, p. 406.

Reprinted in Geol. Magazine, x, 1873, pp. 33-34.

Describes *Oreocyon latidens*.

—— 1872 P

Notice of a new reptile from the Cretaceous.

Amer. Jour. Sci. (3), iv, p. 406.

This paper describes the jaws of *Colonosaurus mudgei* n. g. et n. sp., which were afterwards found to be the jaws of *Ichthyornis dispar*. The paper is noticed in Geol. Magazine, x, 1873, p. 34.

—— 1872 Q

Notice of a new and remarkable fossil bird.

Amer. Jour. Sci. (3), iv, p. 344.

Reprinted in Amer. Naturalist, vii, p. 50, and Ann. and Mag. Nat. Hist. (4), xi, p. 80, 1873.

Describes *Ichthyornis dispar*.

—— 1872 R

Notice of some remarkable fossil mammals.

Amer. Jour. Sci. (3), iv, pp. 343-344.

Describes *Dinoceras mirabilis* and *Dinoceras lacustris*.

—— 1872 S

Discovery of new Rocky Mountain fossils.

Proc. Amer. Philos. Soc., xii, pp. 578-579.

Reprinted in Ann. Sci. Geol., Paris, iii, pp. 99-100.

—— 1872 T

New and remarkable fossils.

Amer. Naturalist, vi, pp. 495-497.

Copied from the Yale Courant.

—— 1873 A

Notice of a new species of *Ichthyornis*.

Amer. Jour. Sci. (3), v, p. 74.

Description of *Ichthyornis celer*. Abstracts in Nature, vii, p. 310, 1873; Jour. de Zoologie, ii, pp. 40-41.

Marsh, O. C.—Continued. 1873 B

On the gigantic fossil mammals of the order *Dinocerata*.

Amer. Jour. Sci. (3), v, pp. 117–122, with pls. i, ii.

Translated into French in Ann. Sci. Naturelles (5), Zool., xvii. art. 9, pl. 21.

Jour. de Zoologie, ii, pp. 160–168.

For republication, abstracts, etc., see Marsh, 1884 F, p. 227.

—— 1873 C

On a new subclass of fossil birds (*Odontornithes*).

Amer. Jour. Sci. (3), v, pp. 161–162.

Reprinted in Amer. Naturalist, vii, pp. 115–117; Ann. and Mag. Nat. Hist. (4), xi, pp. 233–234.

Translated into French in Ann. Sci. Naturelles (5), Zool., xvii, art. 9, pp. 8–11. Noticed in Geol. Magazine, x (1873), p. 115. Remarks on by Troschel in Verhandl. naturh. Vereines preuss. Rheinlande, xxx, Sitzungsber, p. 83.

Announces discovery of teeth.

—— 1873 D

Fossil birds from the Cretaceous of North America.

Amer. Jour. Sci. (3), v, pp. 229–230.

—— 1873 E

Note on the dates of some of Professor Cope's recent papers.

Amer. Jour. Sci. (3), v, pp. 235–236.

Also Amer. Naturalist, vii, pp. 303–306.

—— 1873 F

Additional observations on the *Dinocerata*.

Amer. Jour. Sci. (3), v, pp. 293–296.

—— 1873 G

Supplementary note on the *Dinocerata*.

Amer. Jour. Sci. (3), v, pp. 310–311.

—— 1873 H

Notice of new Tertiary mammals.

Amer. Jour. Sci. (3), v, pp. 407–410, 485–488. Abstract in Nature, viii, p. 76, 1873.

—— 1873 I

New observations on the *Dinocerata*.

Amer. Jour. Sci. (3), v, pp. 300–301.

—— 1873 J

On the gigantic mammals of the American Eocene.

Proc. Amer. Philos. Soc., xiii, pp. 255–256.

—— 1873 K

The fossil mammals of the order *Dinocerata*.

Amer. Naturalist, vii, pp. 146–153, with pls. i and ii.

Published in part in Amer. Jour. Sci. (3), v, pp. 117–122 (Marsh, O. C., 1873 B).

Marsh, O. C.—Continued. 1873 L

On the genus *Tinoceras* and its allies.

Amer. Naturalist, vii, pp. 217–218.

In reply to Prof. E. D. Cope, Amer. Naturalist, vii, pp. 157–160 (Cope, E. D., 1873 W).

—— 1873 M

Tinoceras and its allies.

Amer. Naturalist, vii, pp. 306–308.

—— 1873 N

On some of Professor Cope's recent investigations.

Amer. Naturalist, vii, pp. 51–52.

—— 1873 O

Note on the dates of some of Professor Cope's recent papers.

Amer. Naturalist, vii, p. 173.

—— 1873 P

Reply to Professor Cope's explanation.

Amer. Naturalist, vii, appendix to June number, pp. i–ix.

—— 1874 A

On the structure and affinities of the *Brontotheridæ*.

Amer. Jour. Sci. (3), vii, pp. 81–86, with pls. i and ii.

Abstracts: Nature, ix, p. 227, 1874; Amer. Naturalist, vol. viii, pp. 79–85, 1874; Jour. de Zoolologie, iii, pp. 61–62, 1874.

—— 1874 B

Notice of new equine mammals from the Tertiary formation.

Amer. Jour. Sci. (3), vii, pp. 247–258, with 5 figs. in the text.

Reprinted in Ann. and Mag. Nat. Hist. (4), xiii, pp. 397–400. Abstract in Nature, ix, p. 390, 1874.

Contains discussion of origin of modern horse.

—— 1874 C

Notice of new Tertiary mammals. III.

Amer. Jour. Sci. (3), vii, pp. 531–534.

—— 1874 D

Small size of the brain in Tertiary mammals.

Amer. Jour. Sci. (3), viii, pp. 66–67.

Reprints in Ann. and Mag. Nat. Hist., xiv, p. 167, Amer. Naturalist, viii, pp. 503–504, Jour. de Zoologie, iii, pp. 326–327. Abstract in Neues Jahrbuch Mineral., p. 772, 1874, and in Nature, x, p. 273.

—— 1875 A

(An editorial note stating Professor Marsh's claim that Professor Cope's *Calamodon* is identical with Professor Marsh's *Stylinodon*.)

Amer. Jour. Sci. (3), ix, p. 151.

Marsh, O. C.—Continued. 1875 B

Notice of new Tertiary mammals. IV.

Amer. Jour. Sci. (3), ix, pp. 239–250.

A notice of this paper, containing a list of the forms described, may be found in Jour. de Zoologie, iv, 1875, pp. 98–99.

—— 1875 C

New order of Eocene mammals.

Amer. Jour. Sci. (3), ix, p. 221.

Reprinted in Amer. Naturalist, ix, pp. 182–183; in Nature, xi, 1875, p. 368; in Ann. and Mag. Nat. Hist. (4), xv, p. 307; Jour. de Zoologie, iv, 1875, pp. 70–71; Pop. Sci. Rev., London, 1875, p. 207.

The new order proposed is denominated *Tillodontia*.

—— 1875 D

On the *Odontornithes*, or birds with teeth.

Amer. Jour. Sci. (3), x, pp. 402–408, with pls. ix, x.

Reprinted in Geol. Magazine (2), iii, 1876, pp. 49–53, pl. ii; also in Jour. de Zoologie, iv, 1875, pp. 494–502, pl. xv.

—— 1875 E

Odontornithes, or birds with teeth.

Amer. Naturalist, ix, pp. 624–631, with pls. ii, iii.

Same as the preceding paper.

—— 1875 F

Mastodon of Otisville, Orange County, N. Y.

Amer. Jour. Sci. (3), ix, p. 483.

—— 1876 A

Principal characters of the *Dinocerata*.

Amer. Jour. Sci. (3), xi, pp. 163–168, pls. ii–vi.

Reprinted in Jour. de Zoologie, v, pp. 136–145, pl. iv.

Abstracts, etc., Nature, xiii, p. 374, 1876; Zeitschr. gesammt. Naturwiss. xiv, pp. 31–32, 1876; Neues Jahrb. Mineral., pp. 780–781, 1876; Pop. Sci. Rev., London pp. 326–327, 1876.

—— 1876 B

Principal characters of the *Tillotia*.

Amer. Jour. Sci. (3), xi, pp. 249–252, with pls. viii and ix.

A translation of this paper appeared in Jour. de Zoologie, v, pp. 244–248, pl. xi. Abstract in Nature, xiii, p. 374.

—— 1876 C

Principal characters of the *Brontotheridæ*.

Amer. Jour. Sci. (3), xi, pp. 335–340, pls. x–xiii and 2 figs. in text.

A translation of this paper appeared in Jour. de Zoologie, v, 1876, pp. 248–255; pl. xii. Abstract in Nature, xiv, p. 36.

Marsh, O. C.—Continued. 1876 D

On some characters of the genus *Coryphodon*.

Amer. Jour. Sci. (3), xi, pp. 425–428, with 1 page of figs.

Abstracts: Pop. Sci. Rev., London.. 1876, p. 327; Nues Jahrb. Mineral., 1876, p. 781; Archiv. Sci. Phys. et Nat., Geneva, lvi, pp. 273, 274.

—— 1876 E

Notice of a new sub-order of *Pterosauria*.

Amer. Jour. Sci. (3), xi, pp. 507–509.

Abstract in Ann. and Mag. Nat. Hist. (4), xviii, pp. 195–196; Jour. de Zoologie, v., pp. 457–458.

—— 1876 F

Notice of new *Odontornithes*.

Amer. Jour. Sci. (3), xi, pp. 509–511.

Translated into French in Jour. de Zoologie, v., 1876, pp. 304–306.

—— 1876 G

Recent discoveries of extinct animals.

Amer. Jour. Sci. (3), xii, pp. 59–61.

Same, Amer. Naturalist, x, pp. 436–439.

Abstract Neues Jahrb. Mineral., 1876, p. 782.

—— 1876 H

Notice of new Tertiary mammals. V.

Amer. Jour. Sci. (3), xii, pp. 401–404.

Abstracts in Arch. Sci. Phys. et Nat., Geneva, xlix, pp. 127–128; Pop. Sci. Rev., London, 1877, pp. 97–98.

—— 1876 I

Principal characters of American pterodactyls.

Amer. Jour. Sci. (3), xii, pp. 479–480.

—— 1877 A

Characters of *Coryphodontidæ*.

Amer. Jour. Sci. (3), xiv, pp. 81–85, with pl. iv.

Abstracts: Amer. Naturalist, xi, 1877, p. 500; Neues Jahrb. Mineral. 1877, p. 767. Reprint in Jour. de Zoologie, vi, 1877, pp. 380–385.

—— 1877 B

Characters of the *Odontornithes*, with notice of a new allied genus.

Amer. Jour. Sci. (3), xiv, pp. 85–87, with pl. v.

Reprinted in Jour. de Zoologie, vi, pp. 385–389.

Baptornis advenus, new genus and species, is described.

—— 1877 C

Notice of a new and gigantic dinosaur.

Amer. Jour. Sci. (3), xiv, pp. 87–88.

Reprinted in Jour. de Zoologie, vi, pp. 248–250.

Titanosaurus montanus described.

Marsh, O. C.—Continued. 1877 D

New vertebrate fossils.

Amer. Jour. Sci. (3), xiv, pp. 249-256.

Notice of this paper occurs in Amer. Naturalist, xi, p. 629.

—— 1877 E

Introduction and succession of vertebrate life in America. Vice-president's address before Amer. Assoc. Adv. Science, 1877.

Amer. Jour. Sci. (3), xiv, pp. 337-378.

Proc. Amer. Assoc. Adv. Science, Nashville meeting, 1877, pp. 211-258; published 1878 (Marsh, 1878 G).

For reprints, see Marsh, 1884 F, p. 234.

—— 1877 F

New order of extinct *Reptilia* (*Stegosauria*) from the Jurassic of the Rocky Mountains.

Amer. Jour. Sci. (3), xiv, pp. 513-514.

—— 1877 G

Notice of new dinosaurian reptiles from the Jurassic formation.

Amer. Jour. Sci. (3), xiv, pp. 514-516.

—— 1877 H

Brain of *Coryphodon*.

Amer. Naturalist, xi, p. 375.

A criticism on Professor Cope's paper in same journal, xi, p. 312.

—— 1878 A

New species of *Ceratodus*, from the Jurassic.

Amer. Jour. Sci. (3), xv, p. 76.

Describes *Ceratodus güntheri*.

—— 1878 B

Notice of new dinosaurian reptiles.

Amer. Jour. Sci. (3), xv, pp. 241-244, with 2 figs. in the text.

Abstract in Pop. Sci. Rev., London, 1878, pp. 210-211.

—— 1878 C

Notice of new fossil reptiles.

Amer. Jour. Sci. (3), xv, pp. 409-411,

—— 1878 D

Fossil mammal from the Jurassic of the Rocky Mountains.

Amer. Jour. Sci. (3), xv, p. 459.

Reprinted in Ann. and Mag. Nat. Hist. (5), vol. ii, p. 108; Pop. Sci. Rev., London, 1878, pp. 322-323.

Describes *Dryolestes priscus* Marsh.

—— 1878 E

New pterodactyle from the Jurassic of the Rocky Mountains.

Amer. Jour. Sci. (3), xvi, pp. 233-234.

Abstracts in Neues Jahrb. Mineral., 1878, p. 895; Pop. Sci. Rev., London, 1878, p. 436.

Describes *Pteryodactylus montanus*.

Marsh, O. C.—Continued. 1878 F

Principal characters of American Jurassic dinosaurs. Part I.

Amer. Jour. Sci. (3), xvi, pp. 411-416, pls. iv-x.

Abstract in Neues Jahrb. Mineral., 1880, pp. 256-257.

—— 1878 G

The introduction and succession of vertebrate life in America.

Proc. Amer. Assoc. Adv. Science, 26th meeting, Nashville, 1877, pp. 211-258.

Also Pop. Sci. Month., xii, pp. 513-527; 672-697.

Vice-presidential address before Amer. Assoc. Adv. Sci., 1877. Same as Marsh, 1877 E, with footnotes.

—— 1878 H

Brain of a fossil mammal.

Nature, xvii, p. 340.

On the brain of *Coryphodon*.

—— 1879 A

A new order of extinct reptiles (*Sauranodonta*) from the Jurassic formation of the Rocky Mountains.

Amer. Jour. Sci. (3), xvii, pp. 85-86.

Abstract in Ann. and Mag. Nat. Hist. (5), iii, pp. 175-176; Pop. Sci. Rev., London, 1879, p. 205.

—— 1879 B

Principal characters of American Jurassic dinosaurs. Part II.

Amer. Jour. Sci. (3), xvii, 86-92, with pls. iii-x.

Abstract in Neues Jahrb Mineral., 1880, pp. 257-258.

—— 1879 C

The vertebræ of recent birds.

Amer. Jour. Sci. (3), xvii, 266-269, with 5 figs. in text.

—— 1879 D

Polydactyle horses, recent and extinct.

Amer. Jour. Sci. (3), xvii, 499-505, with text figures.

Reprinted in Kosmos, v, pp. 432-438. Abstracts in Pop. Sci. Rev., London, 1879, pp. 318-319; Neues Jahrb. Mineral., 1881, pp. 103-104.

—— 1879 E

Notice of a new Jurassic mammal.

Amer. Jour. Sci. (3), xviii, pp. 60-61.

Reprinted in Ann. and Mag. Nat. Hist. (5), iv, pp. 167-168; Geol. Magazine (2), vi, pp. 371-372.

Describes new genus *Stylacodon*, with new species *S. gracilis*. New family *Stylodontidæ* proposed.

Marsh, O. C.—Continued. 1879 F

Additional remains of Jurassic mammals.

Amer. Jour. Sci. (3), xviii, 215–216, with 1 fig. in text.

Abstract in Pop. Sci. Rev., Lond., 1879, p. 428.

—— 1879 G

Notice of new Jurassic mammals.

Amer. Jour. Sci. (3), pp. xviii, 396–398, with 1 fig. in text.

—— 1879 H

Notice of new Jurassic reptiles.

Amer. Jour. Sci. (3), xviii, pp. 501–505, with pl. iii and 1 text fig.

—— 1879 I

History and methods of palæontological discovery.

Amer. Jour. Sci. (3), xviii, pp. 323–359.

Reprinted in Nature, xx, pp. 494–499; 515–521. Kosmos, vi, pp. 339–352, 425–445, 1880; Proc. Amer. Assoc. Adv. Sci., xxviii, pp. 1–42, Salem, 1880; Pop. Sci. Month., xvi, pp. 219–236; 363–380.

—— 1880 A

New characters of mosasauroid reptiles.

Amer. Jour. Sci. (3), xix, pp. 83–87, with pl. i and 4 figs. in text.

Abstract in Neues Jahrb. Mineral., 1880, pp. 104–105.

—— 1880 B

The limbs of *Sauranodon*, with notice of a new species.

Amer. Jour. Sci. (3), xix, pp. 169–171, with 1 fig. in text.

For notice of this paper, by C. G. Giebel, see Zeitschr. gesammt. Naturwiss. (3), v, p. 357, 1880; Abstracts in Kosmos, vii, pp. 74–77; Neues Jahrb. Mineral., 1880, pp. 105–106.

—— 1880 C

Principal characters of American Jurassic dinosaurs. Part III.

Amer. Jour. Sci. (3), xix, pp. 253–259, with pls. vi–xi.

Abstract in Neues Jahrb. Mineral., 1880, pp. 106–107.

—— 1880 D

The sternum in dinosaurian reptiles.

Amer. Jour. Sci. (3), xix, pp. 395–396, with pl. xviii.

For synopses of this paper, see Kosmos, vii, p. 317; Neues Jahrb. Mineral., 1881, pp. 104–105.

—— 1880 E

Note on *Sauranodon*.

Amer. Jour. Sci. (3), xix, p. 491.

Notes change of name to *Baptanodon*.

Marsh, O. C.—Continued. 1880 F

Notice of Jurassic mammals representing two new orders.

Amer. Jour. Sci. (3), xx, pp. 235–239, with 1 fig. in the text.

Abstract in Arch. Sci. Phys. et Nat., Geneva, 1880, iv, pp. 420–422.

—— 1880 G

Odontornithes: A monograph on the extinct toothed birds of North America, with 34 plates and 40 woodcuts.

Report of the geological exploration of the 40th parallel, by Clarence King; pp. i–xv: 1–201. Washington, 1880.

For abstracts, see Marsh, O. C., 1898 D. p. 26.

—— 1880 H

List of genera established by Prof. O. C. Marsh, 1862–1879.

Pp. 1–12. No date, but probably issued near beginning of year 1880. For continuation of the list, see Marsh, O. C., 1889 I.

—— 1881 A

Principal characters of American Jurassic dinosaurs. Part IV. Spinal cord, pelvis, and limbs of *Stegosaurus*.

Amer. Jour. Sci. (3), xxi, pp. 167–170, with pls. vi–viii.

See also Kosmos, ix, pp. 319–321; Neues Jahrb. Mineral., 1881, pp. 109–110, 270–271.

—— 1881 B

New order of extinct Jurassic reptiles (*Cœluria*).

Amer. Jour. Sci. (3), xxi, pp. 339–340, with pl. x.

Reprinted in Kosmos, ix, pp. 464–465.

—— 1881 C

Discovery of a fossil bird in the Jurassic of Wyoming.

Amer. Jour. Sci. (3), xxi, pp. 341–342.

Reprinted in Ann. and Mag. Nat. Hist. (5), vii, 1881, pp. 488–489.

Describes *Laopteryx priscus* Marsh.

—— 1881 D

Note on American pterodactyls.

Amer. Jour. Sci. (3), xxi, pp. 342–343.

Abstract in Neues Jahrb. Mineral., 1881, p. 415.

—— 1881 E

Principal characters of American Jurassic dinosaurs. Part V.

Amer. Jour. Sci. (3), xxi, pp. 417–423; pls. xii–xviii, with 7 plates.

—— 1881 F

New Jurassic mammals.

Amer. Jour. Sci. (3), xxi, pp. 511–513.

Marsh, O. C.—Continued. 1881 G

Restoration of *Dinoceras mirabile*.

Amer. Jour. Sci. (3), xxii, pp. 31–32, with pl. ii.

Abstract in Archiv. Sci. Phys. et Nat., Geneva, vi, 1881, pp. 323–324.

—— 1881 H

Jurassic birds and their allies.

Amer. Jour. Sci. (3), xxii, pp. 337–340.

Reprinted in Pop. Sci. Month., xx, pp. 312–315; Science (1), ii, pp. 512–513; Geol. Magazine (2), viii, pp. 485–487; Nature, xxv, pp. 22–23; Kosmos, x, pp. 231–234; Ann. and Mag. Nat. Hist. (5), viii, pp. 451–455.

—— 1882 A

Classification of the *Dinosauria*.

Amer. Jour. Sci. (3), xxiii, pp. 81–86.

Read before the National Acad. Sci., Nov. 14, 1881.

Reprinted in Kosmos, v, pp. 382–387; Geol. Magazine (2), ix, pp. 80–85; Ann. and Mag. Nat. Hist. (5), ix, pp. 79–84; Nature, xxv, pp. 244–246.

—— 1882 B

The wings of pterodactyles.

Amer. Jour. Sci. (3), xxiii, pp. 251–256, with pl. iii.

See also Geol. Magazine (2), ix, pp. 205–210; Kosmos, vi, pp. 103–108; and Nature, xxv, pp. 531–533.

Describes *Rhamphorhynchus phyllurus* Marsh.

—— 1882 C

Jurassic birds and their allies.

Report Brit. Assoc. Adv. Sci., 51st meeting, York, 1881, pp. 661–662.

Same as Marsh, O. C., 1881 H.

—— 1883 A

Principal characters of American Jurassic dinosaurs. Part VI. Restoration of *Brontosaurus*.

Amer. Jour. Sci., (3), xxvi, pp. 81–85, with pl. i.

See also Geol. Magazine for 1883, pp. 386–388.

—— 1883 B

On the supposed human footprints recently found in Nevada.

Amer. Jour. Sci. (3), xxvi, pp. 139–140, with 2 figs. in the text.

Abstract in Nature, xxviii, pp. 370–371; Neues Jahrb. Mineral., 1884, pp. 262–263.

—— 1883 C

Birds with teeth.

Third annual report of the U. S. Geol. Surv. to the Secretary of the Interior, 1881–82, by J. W. Powell, director, Washington, 1883, pp. 45–88, with 33 figs. in the text.

Marsh, O. C.—Continued. 1884 A

Principal characters of American Jurassic dinosaurs. Part VII. On the *Diplodocidæ*, a new family of the *Sauropoda*.

Amer. Jour. Sci. (3), xxvii, pp. 160–168, with pls. iii and iv.

Abstract with 3 figures in Science, iii, p. 199; Kosmos, ii, pp. 350–357. Notice by Cope, Amer. Naturalist, xix, p. 67. Reproduced in Geol. Magazine (2), x, pp. 99–107, with 10 figs. in the text.

—— 1884 B

Principal characters of American Jurassic dinosaurs. Part VIII. The order of *Theropoda*.

Amer. Jour. Sci. (3), xxvii, pp. 329–340, with pls. viii–xiv.

Abstract with figures in Science, iii, pp. 542–544; Kosmos, ii, pp. 357–365. Reprinted in Geol. Magazine (3), i, pp. 252–262. Notice by Cope in Amer. Naturalist, xix, p. 67.

—— 1884 C

A new order of extinct Jurassic reptiles.

Amer. Jour. Sci. (3), xxvii, p. 341, with 1 text fig.

—— 1884 D

Principal characters of American Cretaceous pterodactyls. Part I. The skull of *Pteranodon*.

Amer. Jour. Sci. (3), xxvii, pp. 422–426, with pl. xv.

Reprinted in Geol. Magazine (3), i, pp. 345–348.

—— 1884 E

On the united metatarsal bones of *Ceratosaurus*.

Amer. Jour. Sci. (3), xxviii, pp. 161–162, with 2 figs. in the text.

—— 1884 F

Dinocerata. A monograph of an extinct order of gigantic mammals.

Monographs U. S. Geol. Surv., x, pp. i–xviii; 1–237, with 56 pls. and 200 woodcuts in text. Washington, D. C.

Reviewed in Geol. Magazine, (3), ii, 1885, pp. 212–228, with many figures reproduced.

Abstracts in Amer. Jour. Sci. (3), xxix, pp. 173–204; Geol. Magazine (3), ii, pp. 212–228; Nature, xxxii, pp. 97–99; Pop. Sci. Month., xxviii, pp. 133–134; Neues Jahrb. Mineral., 1886, i, pp. 339–341; Ann. Sci. Géol., Paris, xvii, pp. 1–11.

—— 1884 G

The classification and affinities of the dinosaurian reptiles.

Nature, xxxi, pp. 68–69.

Abstract in Science, iv, p. 261.

Read before Brit. Assoc. Adv. Sci., Montreal meeting, 1884.

Marsh, O. C.—Continued. 1885 A

Names of extinct reptiles.

Amer. Jour. Sci. (3), xxix, p. 169.

—— 1885 B

The gigantic mammals of the order *Dinocerata*.

Fifth Annual Report of the U. S. Geol. Surv., Washington, D. C., 1885, pp. 243–302, with 100 figs. in the text.

—— 1885 C

On American Jurassic mammals.

Report Brit. Assoc. Adv. Sci., 54th meeting, Montreal, 1884, pp. 734–736.

Illustrated with a geological section.

—— 1885 D

On the classification and affinities of dinosaurian reptiles.

Report Brit. Assoc. Adv. Sci., 54th meeting, Montreal, 1884, pp. 763–765.

Same as Marsh, O. C., 1884 G.

—— 1887 A

American Jurassic mammals.

Amer. Jour. Sci. (3), xxxiii, pp. 326–348, with pls. vii–x.

See also Geol. Magazine (3), iv, 1887, pp. 242–247, 289–290, pls. vii–ix.

—— 1887 B

Notice of new fossil mammals.

Amer. Jour. Sci. (3), xxxiv, pp. 323–331, with 12 figs. in the text.

—— 1887 C

Principal characters of American Jurassic dinosaurs. Part IX. The skull and dermal armor of *Stegosaurus*.

Amer. Jour. Sci. (3), xxxiv, pp. 413–417, with pls. vi–ix.

Reprinted in Geol. Magazine (3), v, pp. 11–15.

—— 1888 A

Notice of a new genus of *Sauropoda* and other new dinosaurs from the Potomac formation.

Amer. Jour. Sci. (3), xxxv, pp. 89–94, with 9 figs. in the text.

—— 1888 B

Notice of a new fossil sirenian from California.

Amer. Jour. Sci. (3), xxxv, pp. 94–96, with 3 figs. in the text.

—— 1888 C

A new family of horned dinosaurs from the Cretaceous.

Amer. Jour. Sci. (3), xxxvi, pp. 477–478, with pl. xi.

—— 1888 D

The skull and dermal armor of *Stegosaurus*.

Geol. Magazine (3), v, pp. 11–15, pls. i–iii, and 3 figs. in the text.

Marsh, O. C.—Continued. 1889 A

Restoration of *Brontops robustus*, from the Miocene of America.

Amer. Jour. Sci. (3), xxxvii, pp. 163–165, with pl. vi.

Reprints in Rep. Brit. Assoc. for 1888, pp. 706–707, 1889; Geol. Magazine (3), vi, pp. 99–101.

—— 1889 B

Comparison of the principal forms of the *Dinosauria* of Europe and America.

Amer. Jour. Sci. (3), xxxvii, pp. 323–331.

Also in Geol. Magazine (3), vi, pp. 204–210.

—— 1889 C

Notice of new American dinosaurs.

Amer. Jour. Sci. (3), xxxvii, pp. 331–336, with figs. 1–5.

—— 1889 D

Discovery of Cretaceous *Mammalia*.

Amer. Jour. Sci. (3), xxxviii, pp. 81–92, with pls. ii–v.

Review by W. Dames in Neues Jahrb. Mineral., 1890, pp. 141–143.

—— 1889 E

Notice of gigantic horned *Dinosauria* from the Cretaceous.

Amer. Jour. Sci. (3), xxxviii, pp. 173–175, with 1 text fig.

—— 1889 F

Discovery of Cretaceous *Mammalia*, pt. ii.

Amer. Jour. Sci. (3), xxxviii, pp. 177–180, with pls. vii–viii.

For review by W. Dames see Neues Jahrb. Mineral., 1890, pp. 141–143.

—— 1889 G

Skull of the gigantic *Ceratopsidæ*.

Amer. Jour. Sci. (3), xxxviii, pp. 501–506, with pl. xii.

Reprinted in Geol. Magazine (3), vii, pp. 1–5, pl. i.

—— 1889 H

Restoration of *Brontops robustus* from the Miocene of America.

Report Brit. Assoc. Adv. Sci., 58th meeting, Bath, 1888, pp. 706–707.

Same as Marsh, O. C., 1889 A.

—— 1889 I

Additional genera established by Prof. O. C. Marsh, 1880–1889.

Pp. 13–17.—Issued privately, probably toward end of year 1889. No date. A list of proposed genera, with derivations and place of publication. For beginning of list see **Marsh**, O. C., 1880 H.

—— 1890 A

Description of new dinosaurian reptiles.

Amer. Jour. Sci. (3), xxxix, pp. 81–86, with pl. i.

Marsh, O. C.—Continued. 1890 B

Distinctive characters of the order *Hallopoda.*

Amer. Jour. Sci. (3), xxxix, pp. 415-417, with 1 text figure.

—— 1890 C

Additional characters of the *Ceratopsidæ*, with notice of new Cretaceous dinosaurs

Amer. Jour. Sci. (3), xxxix, 418-426, with pls. v-vii.

—— 1890 D

Notice of new Tertiary mammals.

Amer. Jour. Sci. (3), xxxix, pp. 523-525.

—— 1890 E

Notice of some extinct *Testudinata.*

Amer. Jour. Sci, (3), xl, pp. 177-179, with pls. vii, viii.

—— 1890 F

The skull of the gigantic *Ceratopsidæ.*

Geol. Magazine (3), vii, pp. 1-5, pl. i.

—— 1891 A

A horned artiodactyle (*Protoceras celer*) from the Miocene.

Amer. Jour. Sci. (3), xli, pp. 81-82.

—— 1891 B

The gigantic *Ceratopsidæ*, or horned dinosaurs of North America.

Amer. Jour. Sci. (3), xli, pp. 167-178, pls. i-x.

Reprinted in Geol. Magazine (3), viii, pp. 193-199, text figs. 1-19, pls. iv, v; pp. 241-248, text figs. 1-34.

—— 1891 C

Restoration of *Triceratops* [and *Brontosaurus*].

Amer. Jour. Sci. (3), xli, pp. 339-342, with pls. xv, xvi.

Reprinted in part in Geol. Magazine (3), viii, pp. 248-250, pl. vii.

—— 1891 D

Restoration of *Stegosaurus.*

Amer. Jour. Sci. (3), xlii, pp. 179-181, with pl. ix.

Reprinted in Geol. Magazine (3), viii, pp. 385-387, pl. xi.

—— 1891 E

Notice of new vertebrate fossils.

Amer. Jour. Sci. (3), xlii, pp. 265-269.

—— 1891 F

Geological horizons as determined by vertebrate fossils.

Amer. Jour. Sci. (3), xlii, pp. 336-338, with pl. xii.

See also Compte rend. Cong. Géolog. Internat., Washington, 1891, pp. 156-159, 1893.

Marsh, O. C.—Continued. 1891 G

On the gigantic *Ceratopsidæ* (or horned lizards) of North America.

Report of Brit. Assoc. Adv. Sci., 60th meeting, Leeds, 1890, pp. 793-795.

Same as Marsh, O. C., 1891 B.

—— 1891 H

On the Cretaceous mammals of North America.

Report Brit. Assoc. Adv. Sci., 60th meeting, Leeds, 1890, pp. 853-854.

—— 1891 I

Note on Mesozoic *Mammalia.*

Proc. Acad. Nat. Sci. Phila., 1891, pp. 237-241.

Also in Amer. Naturalist, vol. xxv, pp. 611-616.

A reply to Osborn, H. F., 1891 A.

—— 1891 J

Restoration of *Stegosaurus.*

Geol. Magazine (3), viii, pp. 385-387, with pl. xi.

—— 1892 A

The skull of *Torosaurus.*

Amer. Jour Sci. (3), xliii, pp. 81-84, with pls. ii, iii.

—— 1892 B

Discovery of Cretaceous *Mammalia.* Part iii.

Amer. Jour. Sci. (3), xliii, pp. 249-262, with pls. v-xi.

—— 1892 C

Recent polydactyle horses.

Amer. Jour. Sci. (3), xliii, pp. 339-355, with 21 figs. in the text.

—— 1892 D

A new order of extinct Eocene mammals (*Mesodactyla*).

Amer. Jour. Sci. (3), xliii, pp. 445-449, with 2 figs. in the text.

—— 1892 E

Notice of new reptiles from the Laramie formation.

Amer. Jour. Sci. (3), xliii, pp. 449-453, with text figs. 1-4.

—— 1892 F

Notes on Triassic *Dinosauria.*

Amer. Jour. Sci. (3), xliii, pp. 543-546, with pls. xv-xvii.

—— 1892 G

Notes on Mesozoic vertebrate fossils.

Amer. Jour. Sci. (3), xliv, pp. 171-176, with pls. ii-v.

—— 1892 H

Restorations of *Claosaurus* and *Ceratosaurus.*

Amer. Jour. Sci. (3), xliv, pp. 343-350, with pls. vi-viii.

Marsh, O. C.—Continued. 1892 I

Restoration of *Mastodon americanus*, Cuvier.

Amer. Jour. Sci. (3), xliv, p. 350, with pl. viii.

—— 1893 A

A new Cretaceous bird, allied to *Hesperornis*.

Amer. Jour. Sci. (3), xlv, pp. 81–82, with 3 figs. in the text.

—— 1893 B

The skull and brain of *Claosaurus*.

Amer. Jour. Sci. (3), xlv, pp. 83–86, with pls. iv, v.

—— 1893 C

Restoration of *Coryphodon*.

Amer. Jour. Sci. (3), xlvi, pp. 321–326, with pls. v, vi.

—— 1893 D

Description of Miocene *Mammalia*.

Amer. Jour. Sci. (3), xlvi, pp. 407–412, with pls. vii–x.

—— 1893 E

Restoration of *Mastodon americanus*, Cuvier.

Geol. Magazine (3), x, p. 164, pl. viii. Same as Marsh, O. C., 1892 I.

—— 1893 F

Restorations of *Anchisaurus*, *Ceratosaurus*, and *Claosaurus*.

Geol. Magazine (3), x, pp. 150–157, pls. vi and vii, and 1 fig. in the text.

—— 1893 G

Restoration of *Anchisaurus*.

Amer. Jour. Sci. (3), xlv, pp. 169–170, with pl. vi.

—— 1893 H

Restoration of *Coryphodon*.

Geol. Magazine (3), x, pp. 482–487, pl. xviii, and 6 figs. in the text.

—— 1893 I

Some recent restorations of dinosaurs.

Nature, xlviii, pp. 437–438.

A correction of some errors in R. Lydekker's paper in Nature, xlviii, p. 302.

—— 1893 J

Discussion sur la corrélation des roches clastiques.

Compte rend. Cong. Géol. Internat., Washington, 1891, pp. 156–159.

—— 1894 A

Restoration of *Camptosaurus*.

Amer. Jour. Sci. (3), xlvii, pp. 245–246, with pl. vi.

Marsh, O. C.—Continued. 1894 B

Restoration of *Elotherium*.

Amer. Jour. Sci. (3), xlvii, pp. 407–408, with pl. ix.

—— 1894 C

A new Miocene mammal.

Amer. Jour. Sci. (3), xlvii, p. 409, with 3 figs. in the text.

Describes *Heptacodon curtus*.

—— 1894 D

Footprints of vertebrates in the Coal-measures of Kansas.

Amer. Jour. Sci. (3), xlviii, pp. 81–84, with pls. ii, iii.

—— 1894 E

The typical *Ornithopoda* of the American Jurassic.

Amer. Jour. Sci. (3), xlviii, pp. 85–90, with pls. iv–vii.

—— 1894 F

Eastern division of the Miohippus beds, with notes on some of the characteristic fossils.

Amer. Jour. Sci. (3), xlviii, pp. 91–94, with 2 figs. in the text.

—— 1894 G

Restoration of *Camptosaurus*.

Geol. Magazine (3), i, pp. 193–195, with pl. vi.

Same as Marsh, O. C., 1894 A.

—— 1894 H

Restoration of *Elotherium*.

Geol. Magazine (4), i, pp. 294–295, with pl. x.

Same as Marsh, O. C., 1894 B.

—— 1894 I

Footprints of vertebrates in the Coal-measures of Kansas.

Geol. Magazine (3), i, pp. 337–339, with pl. xi.

Descriptions and figures of several species. The same, in part, as Marsh, O. C., 1894 D.

—— 1894 J

A gigantic bird from the Eocene of New Jersey.

Amer. Jour. Sci. (3), xlviii, p. 344, with 5 figs. in the text.

Describes new genus and species, *Barornis regens*.

—— 1894 K

Miocene artiodactyles from the eastern Miohippus beds.

Amer. Jour. Sci. (3), xlviii, pp. 175–178, with 7 figs. in the text.

—— 1894 L

Description of Tertiary artiodactyles.

Amer. Jour. Sci. (3), xlviii, pp. 259–274, with 34 figs. in the text.

Marsh, O. C.—Continued. 1894 M

A new Miocene tapir.

Amer. Jour. Sci. (3), xlviii, p. 348.

Describes *Tanyops undans* from South Dakota.

—— 1895 A

The *Reptilia* of the Baptanodon beds.

Amer. Jour. Sci. (3), l, pp. 405–406, with 3 figs. in the text.

Figures and describes hind paddle of *Baptanodon discus* and vertebræ of *B. natans* and of *Pantosaurus* (*Parasaurus*) *striatus*.

—— 1895 B

Restoration of some European dinosaurs, with suggestions as to their place among the *Reptilia*.

Amer. Jour. Sci. (3), l, pp. 407–412, with pls. v–viii, and 1 fig. in the text.

Also in Report Brit. Assoc. Adv. Sci., Ipswich, 1895, pp. 685–688; and Geol. Magazine (4), iii, pp. 1–8, figs. 1, 2 and pls. i–iv.

—— 1895 C

On the affinities and classification of the dinosaurian reptiles.

Amer. Jour. Sci. (3), l, pp. 483–498, with pl. x.

Abstract of paper read before International Congress of Zoologists, Leyden, 1885. See also **Marsh**, O. C., 1896 D, **Marsh**, O. C., 1896 A, and **Marsh**, O. C., 1896 D.

—— 1895 D

Fossil vertebrates.

Johnson's Universal Cyclopædia, viii, pp. 491–498, with double plate containing 16 figs., and 48 figs. in the text.

—— 1896 A

Restoration of some European dinosaurs, with suggestions as to their place among the *Reptilia*.

Geol. Magazine (4), iii, pp. 1–9, pls. i–iv.

See also **Marsh**, O. C., 1895 C.

—— 1896 B

A new Belodont reptile (*Stegomus*) from the Connecticut River sandstone.

Amer. Jour. Sci. (4), ii, pp. 59–62, with 3 figs. in the text.

Describes *Stegomus arcuatus*.

—— 1896 C

The dinosaurs of North America.

Sixteenth Annual Report U. S. Geol. Surv., 1894–95, part i, pp. 133–244, with pls. ii–lxxxv, and text figs. 1–66.

—— 1896 D

On the affinities and classification of dinosaurian reptiles.

Compte rendu des séances du troisième Congrès International de Zoologie, Leyden, 1895, pp. 196–211, with 1 pl. and 11 figs. in the text.

See also **Marsh**, O. C., 1895 A and 1895 C.

Marsh, O. C.—Continued. 1896 E

The geology of Block Island.

Amer. Jour. Sci. (4), ii, pp. 295–298.

—— 1896 F

The Jurassic formation on the Atlantic coast.

Amer. Jour. Sci. (4), ii, pp. 433–447, with 2 figs. in text showing relationships of the strata.

See also Science (2) iv, pp. 805–816, figs. 1–2.

—— 1896 G

Amphibian footprints from the Devonian.

Amer. Jour. Sci. (4), ii, pp. 374–375, with 1 fig. of footprint of *Thinopus antiquus*.

—— 1897 A

Affinities of *Hesperornis*.

Amer. Jour. Sci. (4), iii, pp. 347–348.

—— 1897 B

The *Stylinodontia*, a suborder of Eocene Edentates.

Amer. Jour. Sci. (4), iii, pp. 187–146, with 9 figs. in the text.

—— 1897 C

Vertebrate fossils of the Denver Basin.

Monographs U. S. Geol. Surv., xxvii, pp. 473–527, with pls. xxi–xxxi and text figs. 23–102.

—— 1897 D

Principal characters of the *Protoceratidæ*.

Amer. Jour. Sci. (4), iv, pp. 165–176, with pls. ii–vii, with 7 figs. in the text.

—— 1897 E

Recent observations on European dinosaurs.

Amer. Jour. Sci. (4), iv, pp. 413–416.

—— 1898 A

New species of *Ceratopsia*.

Amer. Jour. Sci. (4), vi, p. 92.

Describes *Triceratops calicornis* and *T. obtusus*.

—— 1898 B

The origin of mammals.

Amer. Jour. Sci. (4), vi, pp. 406–409.

Remarks made at International Congress of Zoologists, Cambridge, Eng., 4th meeting, Proceedings, pp. 71–74. See also Science (2), viii, pp. 953–955.

—— 1898 C

On the families of sauropodous *Dinosauria*.

Amer. Jour. Sci. (4), vi, pp. 487–488.

Also in Report Brit. Assoc. Adv. Sci. for 1898 (1899), pp. 909–910. Geol. Magazine (4), vi, 1899, pp. 157–158.

Marsh, O. C.—Continued. 1898 D

List of scientific publications of Othniel Charles Marsh, professor of palæontology in Yale University, 1861–1896.

Pp. 1–49, with two supplements (pp. 50–53), which extend the list to the end of 1898. Issued privately. See Marsh, O. C., 1889, I.

—— 1898 E

Comparative value of fossils in chronology.

Geol. Magazine (4), v, pp. 565–568.

—— 1899 A

Footprints of Jurassic dinosaurs.

Amer. Jour. Sci. (4), vii, pp. 227–232, with pl. v, and 3 figs. in the text.

Reviewed in Neues Jahrb. Mineral., 1901, ii, p. 305.

—— 1899 B

Note on a Bridger Eocene carnivore.

Amer. Jour. Sci. (4), vii, p. 397.

Refers *Limnocyon riparius* Marsh to the new genus *Telmatocyon*.

Marshall, William. 1872 A

Beobachtungen über den Vogelschwanz.

Niederländisches Archiv Zoologie, i, pp. 194–210, with pl. xvi

Martin, K. 1873 A

Ein Beitrag zur Kenntniss fossiler Euganoiden.

Zeitschr. deutsch. geol. Gesellsch., xxv, pp. 699–735, with pl. xxii.

Treats of the anatomy of *Palæoniscus*, *Acrolepis*, *Amblypterus*, *Pygopterus*, etc.

According to Traquair this paper contains many errors.

Martin, W. 1836 A

On the osteology of the sea otter, *Enhydra marina* Flem.

Proc. Zool. Soc. Lond., 1836, iv, pp. 59–62.

Martins, Charles. 1874 A

Sur l'ostéologie des membres antérieurs de l'ornithorynque et de l'échidne comparée à celle des membres correspondants dans les reptiles, les oiseaux et les mammifères.

Assoc. française pour les sciences, 2d session, Lyon, 1873, pp. 533–539.

Mason, William D. H. 1878 A

Letter on the batrachian foot tracks from the Ellengowan shaft in Schuylkill County, dated April 5, 1878.

Proc. Amer. Philos. Soc., xvii, pp. 716–719, 725.

Mather, W. W. 1835 A

[Note on sharks' teeth.]

Amer. Jour. Sci., xxviii, p. 378, with two woodcuts.

Mather, W. W.—Continued. 1838 A

[Letter to editor on bones and teeth of "*Elephas jacksoni*" found in Ohio.]

Amer. Jour. Sci., xxxiv, pp. 362–364, with 3 figs. in the text.

For additional information of these remains, without name, see Mather's First Ann. Rep. Geol. Surv., Ohio, 1838, p. 96. The same is reprinted in Amer. Jour. Sci., xxxiv, p. 358.

Matthew, G. F. 1886 A

Discovery of a Pteraspidian fish in the Silurian rocks of New Brunswick.

Canadian Record of Science, ii, pp. 251–252, with fig. in the text.

Describes finding of *Pteraspis? acadica*.

—— 1887 A

Additional note on the Pteraspidian fish found in New Brunswick.

Canadian Record of Science, ii, pp. 323–326, with 1 fig. in the text.

Refers to *Pteraspis? acadica* (*Cyathaspis acadica*).

—— 1887 B

A preliminary notice of a new genus of Silurian fishes.

Bull. Nat. Hist. Soc. New Brunswick, vi, pp. 69–73, with 1 fig. in the text.

The new genus *Diplaspis* is proposed, with *D. acadica* as type.

—— 1888 A

On some remarkable organisms of the Silurian and Devonian rocks in southern New Brunswick.

Trans. Roy. Soc. Canada, vi, pp. 49–62, with pl. iv.

Has description and figures of *Diplaspis acadica* and comparison with *Palæaspis americana*.

—— 1891 A

[A letter to the American Geologist regarding the age of the Silurian fish, *Diplaspis acadica*.]

Amer. Geologist, viii, pp. 61–62.

Matthew, W. D. 1897 A

Development of the foot in the *Palæosyopinæ*.

Amer. Naturalist, xxxi, pp. 57–58.

Reviewed by M. Schlosser in Neues Jahrb. Mineral., 1901, i, p. 148.

—— 1897 B

On the status of the Puerco fauna.

Anatom. Anzeiger, xiv, pp. 231–232.

See also Science (2), vi, p. 852.

Preliminary report of a paper read before the New York Academy of Sciences.

—— 1897 C

A revision of the Puerco fauna.

Bull. Amer. Mus. Nat. Hist., ix, pp. 259–323, with 20 figs. in the text.

Reviewed by Schlosser in Neues Jahrb. Mineral., 1900, i, Ref., pp. 299–308.

Matthew, W. D.—Continued. 1898 A

On some new characters of *Clænodon* and *Oxyæna.*

Science (2), viii, p. 880.

A brief abstract.

—— 1898 B

[Remarks on *Mixodectes.*]

Trans. N. Y. Acad. Sci., xvi, pp. 369–370.

—— 1899 A

A provisional classification of the fresh-water Tertiary of the West.

Bull. Amer. Mus. Nat. Hist., xii, pp. 19–75.

Presents lists of mammals occurring in each of the formations of each of the basins.

See also **Wortman** and **Matthew.**

Maxwell, J. B. 1845 A

[A letter concerning the discovery of mastodon bones near Hackettstown, N. J.]

Proc. Amer. Philos. Soc., iv, pp. 118–121; 127.

Reprinted in Lond. and Edinb. Philos. Mag., 1845, xxvi, pp. 453–456.

Mayer, Paul. 1886 A

Die unpaaren Flossen der Selachier.

Mittheil. Zoolog. Station zu Neapel, vi, pp. 217–285, with pls. 15–19.

Contains also a discussion of the "Halbwirbel der Selachier," p. 261.

Comments on by J. A. Ryder, Amer. Naturalist, xx, p. 142.

Mayer, ——. 1825 A

Die hintere Extremität der Ophidier.

Nova Acta Acad. Caes. Leop.-Car., xii, pp. 819–842, with pls. lxvi, lxvii.

Mayo, Florence. 1888 A

The superior incisors and canine teeth of sheep.

Bull. Mus. Comp. Zool., xiii, pp. 247–258, with pls. i–ii.

Mehnert, Ernst. 1887 A

Untersuchungen über die Entwicklung des Os pelvis der Vögel.

Morpholog. Jahrbuch, xiii, pp. 259–295, with pls. viii–x and 4 figs. in the text.

Contains numerous citations of the literature of the development and homologies of the pelvic bones.

—— 1889 A

Untersuchungen über die Entwicklung des Beckengürtels bei einigen Säugethieren.

Morpholog. Jahrbuch, xv, pp. 97–112, with pl. vi.

Contains numerous references to the literature of the subject.

Mehnert, Ernst—Continued. 1890 A

Untersuchungen über die Entwicklung des Beckengürtels der *Emys lutaria taurica.*

Morpholog. Jahrbuch, xvi, pp. 537–571, with pl. xx.

Contains numerous references to the literature.

Menzbier, M. v. 1887 A

Vergleichende Osteologie der Pinguine in Anwendung zur Haupteintheilung der Vögel.

Bull. Soc. Imp. Natur. Moscou (n. s.), ii, pp. 483–587, with pl. viii.

Mercer, H. C. 1894 A

Reexploration of Hartman's Cave, near Stroudsburg, Pa., in 1892.

Proc. Acad. Nat. Sci. Phila., 1894, pp. 96–104.

—— 1895 A

A preliminary account of the reexploration, in 1894 and 1895, of the "Bone Hole," now known as Irwin's Cave at Port Kennedy, Montgomery County, Pa.

Proc. Acad. Nat. Sci. Phila., 1895, pp. 443–446.

—— 1897 A

The finding of the fossil sloth at Big Bone Cave, Tennessee, in 1896.

Proc. Amer. Philos. Soc., xxxvi, pp. 36–70, with 26 half-tone figs. in the text.

—— 1899 A

The bone cave at Port Kennedy, Pa., and its partial excavation in 1894, 1895, and 1896.

Jour. Acad. Nat. Sci. Phila., xi, pp. 269–286, with 11 text figs. and a chart of the cave.

Besides a description of the cave, a list of the species recovered is given. These are described in Cope, E. D., 1899 A.

Merian, Peter. 1875 A

Ueber einen angeblichen Embryo von *Ichthyosaurus.*

Verhandl. naturf. Gesellsch. Basel, vi, pp. 343–344.

Mermier, Élie. 1896 A

Étude complementaire sur l'*Aceratherium platyodon* de la Mollasse burdigalienne supérieure des environs de Saint-Nazaire en Royans (Drôme).

Ann. Soc. Linn. de Lyon (n. s.,) xliii, pp. 225–240, with pls. i, ii.

Additional observations are recorded on pp. 257–260.

Merriam, C. Hart. 1894 A

A new subfamily of murine rodents—the *Neotominæ*—with descriptions of a

Merriam, C. Hart.—Continued.

new genus and species and a synopsis of the known forms.

Proc. Acad. Nat. Sci. Phila., 1894, pp. 225–252, with 5 figs. in text.

—— 1895 A

Monographic revision of the pocket gophers, family *Geomyidæ* (exclusive of the species of *Thomomys*).

N. A. Fauna, No. 8 (U. S. Dept. Agriculture), pp. 1–259, with pls. 1–19, maps 1–4, and text figs. 1–71.

—— 1895 B

Revision of the shrews of the American genera *Blarina* and *Notiosorex*.

N. A. Fauna, No. 10 (U. S. Dept. Agriculture), pp. 1–34, with pls. 1–3.

—— 1895 C

Synopsis of the American shrews of the genus *Sorex*.

N. A. Fauna, No. 10 (U. S. Dept. Agriculture), pp. 57–98, with pls. v–xii.

—— 1896 A

Preliminary synopsis of the American bears.

Proc. Biolog. Soc. Washington, x, pp. 65–83, with pls. iv–vi, with 17 figs. in the text.

In this paper 10 species of bears are recognized as occurring in North America.

Merriam, J. C. 1894 A

Ueber die Pythonomorphen der Kansas Kreide.

Palæontographica, xli, pp. 1–39, with 4 pls. and 1 text fig.

—— 1895 A

On some reptilian remains from the Triassic of northern California.

Amer. Jour. Sci. (3), pp. 55–57, with 2 figs. in the text.

Describes the new genus and species *Shastasaurus pacificus*.

—— 1896 A

Sigmogomphius lecontei, a new Castoroid rodent from the Pliocene near Berkeley, Cal.

Bulletin of the department of geology of the University of California, i, pp. 363–370, with 2 figs. in the text.

—— 1899 A

Report on the expedition to the John Day fossil fields.

University Chronicle [Univ. of California], ii, pp. 217–224.

A general account of the region. No species are described.

Metschnikoff, Olga. 1879 A

Zur Morphologie des Becken- und Schulterbogens der Knorpelfische.

Zeitschr. wissensch. Zool., xxxiii, pp. 423–438, with pl. xxiv.

Mettam, A. E. 1895 A

The rudimentary metacarpal and metatarsal bones of the domestic ruminants.

Jour. Anat. and Physiol., xxix, pp. 244–253, with 6 figs. in the text.

Meyer, H. v. 1832 A

Cervus alces fossilis (fossiler Elenn).

Nova Acta Acad. Caes. Leop.-Car., xvi, pp. 463–486, with pl. xxxvii.

—— 1834 A

Die fossilen Zähne und Knochen und ihre Ablagerung in der Gegend von Georgensmund in Bayern.

4to, pp. i–viii, 1–126, with pls. i–xiv.

—— 1835 A

Ueber fossile Reste von Ochsen, deren Arten und das Vorkommen derselben.

Nova Acta Acad. Caes. Leop.-Car. xvii, pp. 101–170, with pls. viii–xii A.

Describes *Bos priscus*, and considers briefly *Bos pallasi* Dekay and *Bos bombifrons*. *Bos priscus* includes *Bison latifrons* of Harlan.

—— 1840 A

[Letter to editor on Grateloup's genus *Squalodon*.]

Neues Jahrb. Mineral., 1840, pp. 587–588.

—— 1841 A

[Letters to editor on *Protorosaurus*, *Squalodon*, and *Hyotherium*.]

Neues Jahrb. Mineral., 1841, pp. 101–104, 241–242.

—— 1844 A

Ueber die fossilen Knochen aus dem Tertiar-Gebilde des Cerro de San Isidro bei Madrid.

Neues Jahrb. Mineral., 1844, pp. 289–310.

Contains description of *Anchitherium*.

—— 1845 A

Zur Fauna der Vorwelt. Fossile Säugethiere, Vögel und Reptilien aus dem Molasse-Mergel von Oeningen.

Pp. i–vi, 1–52, with 12 pls. Frankfurt am Main, 1845.

Continued in Meyer, H. v. 1855 A, Meyer, H. v. 1856 B, and Meyer, H. v. 1860 D.

—— 1845 B

Letter directed to Professor Brown.

Neues Jahrb. Mineral, 1845, pp. 308–313.

Contains remarks on *Mosasaurus maximiliani* and *M. missouriensis*.

Meyer, H. v.—Continued. 1847 A

Die erloschene Cetaceen-Familie der Zeuglodonten, mit *Zeuglodon* und *Squalodon*.

Neues Jahrb. Mineral., 1847, pp. 669-674.

—— 1851 A

Pterodactylus (*Rhamphorhynchus*) *gemmingi*.

Palæontographica, i, pp. 1-21, with pl. v.

—— 1851 B

Ueber den *Archegosaurus* der Steinkohlenformation.

Palæontographica, i, pp. 209-215, with pl. xxxiii, figs. 15-17.

—— 1852 A

Ueber die Beschaffenheit des Stosszahnes von *Elephas primigenius* in der Jugend.

Palæontographica, ii, pp. 75-77, with pl. xiv.

—— 1852 B

Ueber *Chelydra murchisoni* und *Chelydra decheni*.

Palæontographica, ii, pp. 237-247, with pls. xxvi-xxx.

—— 1854 A

Anthracotherium dalmatinum aus der Braunkohle des Monte Promina in Dalmatien.

Palæontographica, iv, pp. 61-66, with pl. xi.

—— 1855 A

Zur Fauna der Vorwelt. Die Saurier des Muschelkalkes, mit Rücksicht auf die Saurier aus buntem Sandstein und Keuper.

Pp. i-viii; 1-167, with 70 pls. Frankfurt am Main, 1847-1855.

—— 1856 A

Ueber den Jugenstand der *Chelydra decheni* aus der Braunkohle des Siebengebirges.

Palæontographica, iv, pp. 56-60.

—— 1856 B

Zur Fauna der Vorwelt. Saurier aus dem Kupferschiefer der Zechstein-Formation.

Pp. i-vi; 1-28, with 9 pls. Frankfurt am Main, 1856.

—— 1857 A

Reptilien aus der Steinkohlen-Formation in Deutschland.

Palæontographica, vi, pp. 59-219, with pls. viiia-xxiii.

Meyer, H. v.—Continued. 1858 A

Reptilien aus der Steinkohlen-Formation in Deutschland.

Pp. 1-126, with pls. A; i-xv. Cassel, 1858. Folio.

This memoir is devoted to descriptions and illustrations of *Archegosaurus* and its species.

—— 1860 A

Rhamphorhynchus gemmingi.

Palæontographica, vii, pp. 79-89; pl. xii.

—— 1860 B

Frösche aus Tertiär-Gebilden Deutschlands.

Palæontographica, vii, 123-182; pls. xvi-xxii.

—— 1860 C

Saurier aus der Tuff-Kreide von Mæstricht und Folx-les-Caves.

Palæontographica, vii, pp. 241-244; pl. xxvi.

—— 1860 D.

Zur Fauna der Vorwelt. Reptilien aus dem lithographischen Schiefer des Jura in Deutschland und Frankreich.

Pp. i-viii; 1-142, with 21 pls. Frankfurt am Main, 1860.

—— 1861 A

Reptilien aus dem Stubensandstein des obern Keupers.

Palæontographica, vii, pp. 253-346; pls. xxviii-xlvii.

—— 1861 B

Pterodactylus spectabilis aus dem lithographischen Schiefer von Eichstätt.

Palæontographica, x, pp. 1-10, pl. 1.

—— 1863 A

Der Schädel des *Belodon* aus dem Stubensandstein des obern Keupers.

Palæontographica, x, pp. 227-246, pls. xxxviii-xlii.

—— 1864 A

Die diluvialen Rhinoceros-Arten.

Palæontographica, xi, pp. 233-283, with pls. xxxv-xliii.

—— 1865 A

Der Schädel von *Glyptodon*.

Palæontographica, xiv, pp. 1-18, with pls. i-vii.

—— 1865 B

Reptilien aus dem Stubensandstein des obern Keupers.

Palæontographica, xiv, pp. 99-104, pls. xxiii-xxix.

—— 1865 C

Zu *Chelydra decheni* aus der Braunkohle des Siebengebirges.

Palæontographica, xv, pp. 41-47, with pl. ix.

Meyer, H. v.—Continued. 1867 A

Die fossile Reste des Genus *Tapirus.*

Palæontographica, xv, pp. 159-200, with pls. xxv-xxxii.

—— 1867 B

Studien über das Genus *Mastodon.*

Palæontographica, xvii, pp. 1-72, with pls. i-ix.

Meyer, Otto. 1885 A

Insectivoren und *Galeopithecus* geologisch alte Formen.

Neues Jahrb. Mineral., 1885, ii, pp. 229-230.

Miall, L. C. 1874 A

Report of the committee, consisting of Professor Phillips, LL. D., F. R. S., Professor Harkness, F. R. S., Henry Woodward, F. R. S., James Thompson, John Brigg, and L. C. Miall, on the Labyrinthodonts of the Coal-measures. Drawn up by L. C. Miall, secretary to the committee.

Report Brit. Assoc. Adv. Sci., Bradford meeting, 1873, pp. 225-249, with pls. i-iii.

—— 1874 B

On the composition and structure of the bony palate of *Ctenodus.*

Quart. Jour. Geol. Soc., xxx, pp. 772-775, with pl. xlvii.

—— 1875 A

Report of the committee, consisting of Professor Huxley, LL. D., F. R. S., Professor Harkness, F. R. S., Henry Woodward, F. R. S., James Thompson, John Brigg, and L. C. Miall, on the structure and classification of the Labyrinthodonts. Drawn up by L. C. Miall, secretary to the committee.

Report Brit. Assoc. Adv. Sci., Belfast meeting, 1874, pp. 149-192, with pls. iv-vii.

Abstract in Nature, 1874, vol. x, p. 449.

—— 1875 B

On the structure of the skull of *Rhizodus.*

Quart. Jour. Geol. Soc., xxxi, pp. 624-627, with 1 text fig.

—— 1875 C

Sur les Labyrinthodontes du terrain houiller. Deuxième partie.

Jour. de Zool. iv, pp. 19-37.

—— 1878 A

Monograph of the Sirenoid and Crossopterygian Ganoids.

Palæontographical Society, xxxii, pp. 1-32; pls. i, ia, ii-v.

Miall, L. C.—Continued. 1878 B

On the genus *Ceratodus,* with special reference to the fossil teeth found at Malédi, Central India.

Palæont. Indica (4), i, pp. 10-17, with pl. iv.

—— 1878 C

The skull of the crocodile. A manual for students.

8 vo, pp. 1-50, London, 1878.

Pp. 42-50 contain a translation with annotations of Rathke's Untersuchungen über die Entwicklung und den Körperbau der Krokodile.

—— 1880 A

On some bones of *Ctenodus.*

Proc. Yorkshire Zool. and Polytech. Soc. (2), vii, pp. 289-299, with 12 text figs.

—— 1884 A

On a new specimen of *Megalichthys* from the Yorkshire coal field.

Quart. Jour. Geol. Soc., xl, pp. 347-352, with 6 figs. in the text.

Middendorff, A. Th. 1850 A

Untersuchungen an Schädeln des gemeinen Landbären als kritische Beleuchtung der Streitfrage über die Arten fossiler Hohlenbären.

Verhandl. russ.-kais. mineralog. Gesellsch., St. Petersburg, Jahrg., 1850-51, pp. 7-99, with text figures.

Middleton, W. G., and **Moore**, Joseph. 1900 A

Skull of fossil bison.

Proc. Indiana Acad. Sci. for 1899, pp. 178-181, with plate.

Miller, Gerritt S. 1894 A

On a collection of small mammals from the New Hampshire mountains.

Proc. Boston Soc. Nat. Hist., xxvi, pp. 177-197, with pls. iii, iv.

—— 1896 A

Genera and subgenera of voles and lemmings.

N. A. Fauna, No. 12 (U. S. Dept. Agriculture), pp. 1-85, with pls. i-iii and 40 figs. in the text.

—— 1897 A

Revision of the North American bats of the family *Vespertilionidæ.*

N. A. Fauna, No. 13 (U. S. Dept. Agriculture), pp. 1-135, with 40 figs. in the text.

This work discusses critically the nomenclature and synonymy of the family *Vespertilionidæ* and its genera and species.

—— 1899 A

A new fossil bear from Ohio.

Proc. Biolog. Soc. Washington, xiii, pp. 53-56.

Describes *Ursus procerus.*

Miller, Gerritt S.—Continued. 1899 B

Preliminary list of New York mammals.

Bull. N. Y. State Mus., vi, No. 29, pp. 271–390.

On pages 372–376 is given a list of the fossil species known from the State.

Miller, Hugh. 1859 A

The Old Red sandstone; or new walks in an old field; to which is appended a series of geological papers read before the Royal Physical Society of Edinburgh.

Pages 427, pls. 14. Boston: Gould and Lincoln, 1859.

Original edition published at Edinburgh, 1841.

—— 1873 A

Footprints of the Creator, or the *Asterolepis* of Stromness, with a memoir by Louis Agassiz.

Fifteenth edition. Edinburgh, 1873. William P. Nimmo.

Miller, John. 1872 A

On the so-called hyoid plate of the *Asterolepis* of the Old Red sandstone.

Report Brit. Assoc. Adv. Sci., 41st meeting, Edinburgh, 1871, pp. 106–107.

Miller, S. A. 1877 A

The American Palæozoic fossils: a catalogue of the genera and species, with names of authors, dates, places of publication, groups of rocks in which found, and the etymology and signification of the words, and an introduction devoted to the stratigraphical geology of the Palæozoic rocks.

Cincinnati, Ohio, 1877, pages i–xv; 1–246.

Pages 227–242 are devoted to lists of the genera and species of Palæozoic vertebrates. In 1883 the author published a supplement consisting of pages 247 to 334, in which were additions and corrections to the contents of the original work. The latter and the supplement bound together constitute the second edition, with the original title. As the same author's work of 1889 is fully quoted in this Bibliography and Catalogue, the present one is not quoted.

—— 1889 A

North American geology and palæontology, for the use of amateurs, students, and scientists.

Pp. 1–664, with 1,177 figs. in the text. Cincinnati, Ohio, 1889.

Pp. 586–614 contain a list of the genera and species of Palæozoic fishes, with references to places of publication. The genera are defined. Pp. 614–627 are similarly devoted to the *Batrachia*.

Miller, S. A.—Continued. 1892 A

First appendix, 1892. [To North American geology and palæontology.]

Pp. 665–718.

The names of vertebrates are found on pp. 713–718. A number of new generic names are proposed to replace preoccupied names.

—— 1897 A

Second appendix to North American geology and palæontology.

Pp. 719–793.

Miller, Sylvanus. 1837 A

Retrospective notice of the discovery of fossil mastodon bones in Orange county (N. Y.).

Amer. Jour. Sci., xxxi, pp. 171–172.

Extract from a letter addressed by Sylvanus Miller, esq., to Hon. Dewitt Clinton, in 1815.

Minot, C. S. 1882 A

Is man the highest animal?

Proc. Amer. Assoc. Adv. Sci., 30th meeting, Cincinnati, 1881, pp. 240–242.

Mitchell, Hugh. 1862 A

On the restoration of *Pteraspis*.

The Geologist, v, pp. 404–406, with 3 figs. in the text.

—— 1864 A

Restoration of *Pteraspis*.

The Geologist, vii, pp. 117–118, fig. 1.

Mitchell, James A. 1895 A

The discovery of fossil tracks in the Newark system (Jura-Trias) of Frederick county, Md.

Johns Hopkins University circulars, xv, no. 121, pp. 15–16.

No species are named.

Mitchill, Samuel L. 1818 A

Observations on the geology of North America; illustrated by the description of various organic remains found in that part of the world.

Cuvier's Essay on the theory of the earth, pp. 319–431, with pls. vi–viii. American edition published by Kirk & Mercein, New York.

—— 1824 A

Observations on the teeth of the *Megatherium* recently discovered in the United States.

Annals Lyc. Nat. Hist. N. Y., i, pp. 58–61, pl. vi.

Mitchill, Smith, J. A., and **Cooper**. 1828 A

Discovery of a fossil walrus in Virginia. Report of Messrs. Mitchill, J. A. Smith, and Cooper on a fossil skull

Mitchell, Smith, J. A., and Cooper—Continued.

sent to Dr. Mitchill by Mr. Cooper, of Accomac County, Va.

Annals Lyc. Nat. Hist. N. Y., ii, pp. 271-272. Notice of in Edinb. New Philos. Jour., 1828, v., p. 325.

Mitivier, M. M. 1892 A

New footprints from the Connecticut Valley.

Proc. Amer. Assoc. Adv. Sci., 40th meeting, Washington, 1891, p. 286. An abstract in 5 lines.

Mivart, St. George. 1864 A

Notes on the crania and dentition of the *Lemuridæ*.

Proc. Zool. Soc. Lond., 1864, pp. 611-648, with 8 figs. in the text.

—— 1865 A

Contributions toward a more perfect knowledge of the axial skeleton in the *Primates*.

Proc. Zool. Soc. Lond., 1865, pp. 545-592, with 13 figs. in the text.

—— 1867 A

Additional notes on the osteology of the *Lemuridæ*.

Proc. Zool. Soc. Lond., 1867, pp. 960-975, with 7 figs. in the text.

—— 1867 B

Notes sur l'ostéologie des Insectivores.

Ann. Sci. Naturelles. (5), Zool. viii, pp. 221-284, with figs. in the text.

—— 1867 C

Notes on the osteology of the *Insectivora*.

Jour. Anat. and Physiol. i, pp. 281-312, with several text figs.; ii, pp. 117-154.

—— 1868 A

Notes sur l'ostéologie des Insectivores.

Ann. Sci. Naturelles, (5), Zool. ix, pp. 311-372, with figs. in the text.

A continuation of Mivart, St. G., 1867 B.

—— 1868 B

On the appendicular skeleton of the *Primates*.

Philos. Trans. Roy. Soc. Lond., clvii, pp. 299-429, pls. xi-xiv.

—— 1870 A

On the axial skeleton of the *Urodela*.

Proc. Zool. Soc. Lond., 1870, pp. 260-278, with 19 figs. in the text.

—— 1871 A

On *Hemicentetes*, a new genus of *Insectivora*, with some additional remarks on the osteology of that order.

Proc. Zool. Soc. Lond., 1871, pp. 58-79, with pl. v and 9 text figs.

Mivart, St. George—Continued. 1873 A

On *Lepilemur* and *Cheirogaleus*, and on the zoological rank of the *Lemuroidea*.

Proc. Zool. Soc. Lond., 1873, pp. 484-510, with pl. xliii and 18 woodcuts in the text.

—— 1874 A

On the axial skeleton of the ostrich (*Struthio camelus*).

Trans. Zool. Soc. Lond., viii, pp. 385-451, with 79 figs. in the text.

—— 1875 A

Ape.

Encylop. Brit., ed. 9, ii, pp. 148-169, with 19 figs. in the text.

This article is followed by a bibliography of the subject.

—— 1877 A

On the axial skeleton of the *Struthionidæ*.

Trans. Zool. Soc. Lond., x, pp. 1-52, with 43 figs. in the text.

—— 1878 A

On the axial skeleton of the *Pelecanidæ*.

Trans. Zool. Soc. Lond., x, pp. 315-378, with pls. lv-lxi.

—— 1879 A

Notes on the fins of Elasmobranchs, with considerations on the nature and homologies of vertebrate limbs.

Trans. Zool. Soc. Lond., x, pp. 439-484, with pls. lxxiv-lxxix.

—— 1881 A

The cat; an introduction to the study of the backboned animals, especially mammals.

Pp. i-xxiii; 1-557, with 1 pl. and 208 figs. in the text. 8 vo.

—— 1882 A

On the classification and distribution of the *Æluroidea*.

Proc. Zool. Soc. Lond., 1882, pp. 135-208, with 15 figs. in the text.

—— 1885 A

Notes on the *Pinnipedia*.

Proc. Zool. Soc. Lond., 1885, pp. 484-501.

Abstract in Archiv f. Anthrop., xvii, pp. 176-177.

—— 1885 B

On the anatomy, classification, and distribution of the *Arctoidea*.

Proc. Zool. Soc. London, 1885, pp. 340-404.

Pp. 397-404 contain valuable tables, which give measurements of various portions of the skeletons, including teeth, of all the genera belonging to the *Arctoidea*.

Mivart, St. George—Continued. 1886 A
Reptiles.
Encyclop. Brit., ed. 9, xx, pp. 445–465, with figs. 3–29.
This portion of the article on *Reptilia* treats of the anatomy of the members of the class, especially of the osteology. Appended is a list of general works on the anatomy.

—— 1892 A
Birds: The elements of ornithology.
Pp. 1–329, with 174 illus., London.

Möbius, K. 1892 A
Die Behaarung des Mammuths und der lebenden Elephanten, vergleichend untersucht.
Sitzungsber. k. p. Akad. Wissensch. Berlin, math. naturw. Cl., 1892, pp. 527–538, with pl. iv.

Mojsisovics, A. 1889 A
Ueber einen seltenen Fall von Polydactylismus beim Pferde.
Anatom. Anzeiger, iv, pp. 255–256.

Molin, Raffaele. 1859 A
Sulla reliquie d' un *Pachyodon* dissoterrate a Libàno due ore nord-est di Belluno in mezzo all' arenaria grigia.
Sitzungsber. Akad. Wissensch. Berlin, math.-nat. Cl., xv, pp. 117–128, with pls. i, ii.

Mollier, S. 1892 A
Zur Entwicklung der Selachierextremitäten.
Anatom. Anzeiger, vii, 1892, pp. 351–365.
Treats of the embryological development of the limbs of *Selachii*.

—— 1893 A
Die paarigen Extremitäten der Wirbelthiere. I. Das Ichthyopterygium.
Merkel and Bonnet's Anatom. Hefte, Ergebnisse, iii, pp. 1–160, with pls. i–viii and several text figs.

—— 1895 A
Die paarigen Extremitäten der Wirbelthiere. II. Das Cheiropterygium.
Merkel and Bonnet's Anatom. Hefte, Ergebnisse, v, pp. 435–529, with 8 pls.

Monks, Sarah P. 1878 A
The columella and stapes in some North American turtles.
Proc. Amer. Philos. Soc., xvii, pp. 335–337, pls. xvi, xvii.

Moore, Charles. 1857 A
On the skin and food of *Ichthyosauri* and *Teleosauri*.
Report Brit. Assoc. Adv. Sci., 26th meeting, Cheltenham, 1856, pp. 69–70.

Moore, Joseph. 1890 A
A recent find of *Castoroides*.
Amer. Naturalist, xxiv, pp. 767–768.
Found at Richmond, Ind.

Moore, Joseph—Continued. 1890 B
Concerning a skeleton of the great fossil beaver, *Castoroides ohioensis*.
Jour. Cincinnati Soc. Nat. Hist., xiii, pp. 138–169, with 25 figs. in the text.

—— 1891 A
Concerning some portions of *Castoroides ohioensis* not heretofore known.
Proc. Amer. Assoc. Adv. Sci., 39th meeting, Indianapolis, 1890, pp. 265–267.
Abstract of paper presented.

—— 1893 A
The recently found *Castoroides* in Randolph County, Ind.
Amer. Geologist, xii, pp. 67–74, with pl. iii.

—— 1897 A
The Randolph mastodon.
Proc. Indiana Acad. Sci. for 1896, pp. 277–278, with pl.
Records finding of remains of a large mastodon in Randolph County, Ind., and of another near New Paris, Ohio.

—— 1900 A
A cranium of *Castoroides* found at Greenfield, Ind.
Proc. Indiana Acad. Sci. for 1899, p. 171, with pls. i, ii.

Moore, W. D. 1873 A
On footprints in the Carboniferous rocks of western Pennsylvania.
Amer. Jour. Sci. (3), v, pp. 292–293.
?*Cheirotherium reiteri* described.

Moreno, Francisco P. 1892 A
Lijeros apuntes sobre dos géneros de cetáceos fósiles de la República Argentina.
Revista Museo La Plata, iii, pp. 393–400, with pls. x, xi.

Morse, E. S. 1871 A
On the carpal and tarsal bones of birds.
Amer. Naturalist, v, pp. 524–525.

—— 1872 A
On the tarsus and carpus of birds.
Annals Lyc. Nat. Hist. N. Y., x, pp. 141–158, with pls. iv, v.

—— 1880 A
On the identity of the ascending process of the astragalus in birds with the intermedium.
Anniv. Mem. Boston Soc. Nat. Hist., 1880, pp. 3–10, pl. i, and 12 figs. in the text.

—— 1884 A
Man in the Tertiaries.
Amer. Naturalist, xviii, pp. 1001–1012.
Vice-presidential address before section of anthropology A. A. A. S., 1884.

Morton, S. G. 1830 A
Synopsis of the organic remains of

Morton, S. G.—Continued.

the ferruginous sand formation; with geological remarks.

Amer. Jour. Sci., xvii, pp. 274–295; xviii, pp. 243–250.

Contains brief and unimportant remarks on the few fossil vertebrates known at that time from the Cretaceous rocks.

—— 1834 A

Synopsis of the organic remains of the Cretaceous group of the United States, illustrated by 19 plates, to which is added an appendix containing a tabular view of the Tertiary fossils hitherto discovered in North America.

Pp. i–vi, 1–88; Appendix, 1–8; and "Additional observations," pp. 4.

Pls. xi, xii contain figures of teeth of sharks. The names of these, given provisionally by L. Agassiz, are found in the "Additional observations."

—— 1835 A

Notice of the fossil teeth of fishes of the United States, the discovery of the Galt in Alabama, and a proposed division of the American Cretaceous group.

Amer. Jour. Sci., xxviii, pp. 276–278.

—— 1842 A

Description of some new species of organic remains of the Cretaceous group of the United States; with a tabular view of the fossils hitherto discovered in this formation.

Jour. Acad. Nat. Sci. Phila., viii, pp. 207–227, pls. x, xi.

Contains description and figure of *Ptychodus mortoni.*

—— 1844 A

Description of the head of a fossil crocodile from the Cretaceous strata of New Jersey.

Proc. Acad. Nat. Sci. Phila., ii, pp. 82–85, with 1 fig. in the text.

Description of *Crocodilus* (*Gavialis?*) *clavirostris.*

—— 1844 B

Fossil bones of *Mosasaurus.*

Proc. Acad. Nat. Sci. Phila., ii, pp. 132–133.

Announces exhibition of bone of *M. occidentalis*, but no description is given.

—— 1845 A

Description of the head of a fossil crocodile from the Cretaceous strata of New Jersey.

Amer. Jour. Sci., xlviii, pp. 265–267, with 1 fig.

Moseley, H. N., and **Lankester**, E. R. 1868 A

On the nomenclature of the mammalian teeth and on the dentition of the mole (*Talpa europæa*) and the badger (*Meles taxus*).

Jour. Anat. and Physiol., iii, pp. 72–80, with pl. ii, figs. 5, 6.

Mudge, B. F. 1866 A

Discovery of fossil footmarks in the Liassic (?) formation of Kansas.

Amer. Jour. Sci. (2), xli, pp. 174–176.

Species not identified. Prof. C. H. Hitchcock regards them as artifacts (Hitchcock, C. H., 1869 A., p. 132).

—— 1874 A

Recent discoveries of fossil footprints in Kansas.

Trans. Kansas Acad. Sci., ii, pp. 7–9 (reprint of 1896, pp. 71–74).

Not assigned to genera and species.

—— 1875 A

Rare forms of fish in Kansas.

Trans. Kansas Acad. Sci., iii, p. 22 (reprint of 1896, pp. 121–122).

Refers to genus *Agassizodus* and to an undetermined snout fish.

Müller, Aug. 1853 A

Beobachtungen zur vergleichenden Anatomie der Wirbelsaüle.

Archiv f. Anat. Physiol. u. wissensch. Med. Jahrg. 1853, pp. 260–316.

Discusses the homologies of the ribs and flesh bones of fishes, the ribs and hæmal arches of the higher vertebrates, the ear bones of the *Cyprinidæ*, etc.

Müller, Johannes. 1831 A

Beiträge zur Anatomie und Naturgeschichte der Amphibien.

Tiedemann and Treviranus's Zeitschr. f. Physiologie, iv, pp. 190–275, with pls. xviii–xxii.

Under *Amphibien* Müller here considers both the groups *Batrachia* and *Reptilia.*

—— 1835 A

Vergleichende Anatomie der Myxinoiden, der Cyclostomen mit durchbohrtem Gaumen. Erster Theil, Osteologie und Myologie.

Pp. 1–276, pls. i–ix. Berlin, 1835.

This portion of the anatomy of the Myxinoids appeared in the Abhandl Akad. Wissensch. Berlin, for 1834 (1836), pp. 56–340.

Extensive comparisons are made in this work with the structures of the other fishes. A "Nachtrag" is added in the part of the work on neurology published in 1838.

—— 1843 A

Beiträge zur Kenntniss der natürlichen Familien der Knochenfische.

Berichte k. p. Akad. Wissensch. Berlin, 1843, pp. 211–218.

Müller, Johannes—Continued. 1846 A

Fernere Bemerkungen über den Bau der Ganoiden.

Archiv Naturgesch., xii, pp. 190–208.

—— 1846 B

Ueber den Bau der Ganoiden.

Berichte k. p. Akad. Wissensch. Berlin, 1846, pp. 67–85.

—— 1846 C

Ueber den Bau und die Grenzen der Ganoiden und über das natürliche System der Fische.

Abhandl. k. p. Akad. Wissensch. Berlin, 1844, pp. 117–216, with pls. i–vi.

—— 1847 A

Basilosaurus.

Amer. Jour. Sci. (2), iv, pp. 421–422.

Extract from a letter sent by J. Müller to A. Retzius.

See also reference to a letter from Professor Müller to Dr. Dunglison in Proc. Amer. Philos. Soc., iv, p. 338. Date of letter Apr. 20, 1847.

—— 1847 B

Ueber die von Herrn Koch in Alabama gesammelten fossilen Knochenreste seines *Hydrarchus.*

Archiv Anat. Physiol., u. Wissench. Med. xiv, pp. 363–377; 378–396.

—— 1847 C

Untersuchungen über den Hydrarchos.

Berichte k. p. Akad. Wissensch. Berlin, 1847, pp. 103–114.

Reprinted in Neues Jahrbuch Min., 1847, pp. 623–631.

—— 1847 D

Ueber den Bau des Schädels des *Zeuglodon cetoides* Ow.

Berichte k. p. Akad. Wissensch. Berlin, 1847, p. 160.

A brief note.

—— 1847 E

Ueber die Wirbelsäule des *Zeuglodon cetoides.*

Berichte k. p. Akad. Wissensch. Berlin, 1847 pp. 185–200.

—— 1849 A

Ueber die fossilen Reste der Zeuglodonten von Nordamerica, mit Rücksicht auf die europäischen Reste aus dieser Familie.

Pp. i–iv; 1–38. Folio, with 27 lith. pls. Berlin, 1849,

—— 1851 A

Neue Beiträge zur Kenntniss der Zeuglodonten.

Monatsber. k. Akad. Wissensch., Berlin, 1851, pp. 236–246.

Müller, J., and **Henle**, J. 1837 A

Ueber die Gattungen der Haifische und Rochen.

Berichte k. p. Akad. Wissensch. Berlin, i, pp. 111–118.

—— —— 1837 B

Ueber die Gattungen der Plagiostomen.

Arch. Naturgesch. 1837, i, pp. 394–401; 434.

—— —— 1838 A

On the generic characters of cartilaginous fishes.

Mag. Nat. Hist. (2), ii, pp. 33–37; 88–92.

—— —— 1841 A

Systematische Beschreibung der Plagiostomen.

Pp. i–xxii; 1–204, with 60 lith. pls. Berlin, 1841.

Murie, James. 1865 A

On the anatomy of a finwhale (*Physalus antiquorum* Gray) captured near Gravesend.

Proc. Zool. Soc. Lond., 1865, pp. 206–227, with 4 woodcuts in text.

—— 1870 A

Notes on the anatomy of the prongbuck, *Antilocapra americana.*

Proc. Zool. Soc. Lond., 1870, pp. 334–368, with 9 woodcuts in the text.

—— 1871 A

Researches upon the anatomy of the *Pinnepedia.* Part I. On the walrus (*Trichechus rosmarus* Linn.).

Trans. Zool. Soc. Lond., vii, pp. 411–464, with pls. ii–iv.

—— 1872 A

On the form and structure of the manatee (*Manatus americanus*).

Trans. Zool. Soc. Lond., viii, pp. 127–202, with pls. xvii–xxvi.

—— 1872 B

On the skin, etc., of the *Rhytina,* suggested by a recent paper of Dr. A. Brandt's.

Ann. and Mag. Nat. Hist. (4), ix, pp. 306–313, with pl. xix.

—— 1874 A

Researches upon the anatomy of the *Pinnepedia.* Part III. Descriptive anatomy of the sea lion (*Otaria jubata*).

Trans. Zool. Soc. Lond., viii, pp. 501–582, with pls. lxxv–lxxxii.

Nasmyth, Alexander. 1842 A

On the minute structure of the tusks of extinct mastodontoid animals.

Proc. Geol. Soc. Lond., iii, pp. 775–780.

Natural Science. 1893 A

The restoration of extinct animals.

Natural Science, ii, pp. 135–143, with 2 figs.

An anonymous paper. Refers to *Triceratops*, *Ceratosaurus*, *Hesperornis*, *Glyptodon*, etc.

—— 1894 A

Armored whales.

Natural Science, iv, pp. 174–176.

An unsigned note.

Nature. 1871 A

American notes.

Nature, iii, p. 514.

A note on *Elephas primigenius* in Alaska.

—— 1873 A

Notes.

Nature, vii, p. 310.

A note on *Dinoceras mirabilis* and the toothed birds.

—— 1873 B

On *Dinoceras mirabilis* (Marsh).

Nature, vii, p. 366, with 1 woodcut.

—— 1873 C

[Note on Professor Cope's *Loxolophodon cornutus*, etc.]

Nature, vii, p. 471.

—— 1874 A

The "*Brontotheridæ*," a new family of fossil mammals.

Nature, ix, p. 227, figs. 1 and 2.

Editorial remarks on Marsh, O. C., 1874 A.

—— 1874 B

A complete specimen of a *Palæotherium*.

Nature, ix, pp. 285–286, with 1 fig.

P. magnum discovered near Paris.

Naumann, Edmund. 1882 A

Ueber japanische Elephanten der Vorzeit.

Palæontographica, xxviii, pp. 1–40, with pls. i–vii.

Negri, Arturo. 1892 A

Trionici eocenici ed oligocenici del Veneto.

Mem. mat. e fisica Soc. Ital. Sci. (3), viii, art. 7, pp. 1–53, with pls. i–v.

On pp. 1–8 are presented the literature bearing on fossil *Trionychidæ* and a list of known species living and extinct.

Nehring, Alfred. 1875 A

Fossile Lemminge und Arvicolen aus dem Diluviallehm von Thiede bei Wolfenbüttel.

Zeitschr. gesammt. Naturwiss., xlv, (n. F., xi), 1875, pp. 1–28, with pl. i.

Discusses the structure of *Arvicola* and *Myodes*, especially that of the teeth.

Nehring, Alfred—Continued. 1886 A

Beiträge zur Kenntniss der *Galictis*-Arten.

Zool. Jahrbücher, Abth. Systemat. Geograph., etc., i, pp. 177–212, with 3 figs. in the text.

—— 1893 A

Ueber pleistocäne Hamster-Reste aus Mittel-und Westeuropa.

Jahrbuch k. k. geol. Reichsanstalt, Wien, xliii, pp. 179–198.

Newberry, J. S. 1853 A

Fossil fishes of the cliff limestone of Ohio.

Annals of Science (Cleveland, Ohio), i, pp. 12–13, text figs. 1, 2.

—— 1853 B

On the fossil fishes of the cliff limestone of Ohio.

Annals of Science (Cleveland, Ohio), i, pp. 282–283.

Abstract of paper presented at Cleveland meeting of Amer. Assoc. Adv. Sci., 1853.

The remarks are of a general nature and no species are named. See Newberry, J. S., 1856 A.

—— 1856 A

On the fossil fishes of the cliff limestone of Ohio.

Proc. Amer. Assoc. Adv. Sci., 7th meeting, Cleveland, 1853, pp. 166–167.

Same as Newberry, J S., 1853 B.

—— 1856 B

Description of several new genera and species of fossil fishes from the Carboniferous strata of Ohio.

Proc. Acad. Nat. Sci. Phila., viii, pp. 96–100.

—— 1857 A

New fossil fishes from the Devonian rocks of Ohio.

Amer. Jour. Sci. (2), xxiv, pp. 147–149.

Extracted from Bulletin of National Institute.

—— 1857 B

[Letter read changing the genus *Mekolepis* to *Eurylepis*, the former being preoccupied.]

Proc. Acad. Nat. Sci. Phila., 1857, p. 150.

—— 1857 C

Fossil fishes from the Devonian of Ohio.

Proc. National Institute, Washington, D. C. (n. s.), i, pp. 119–126, with 1 fig. in the text.

There appears to have been a reprint of this paper with its own pagination.

—— 1862 A

Notes on American fossil fishes.

Amer. Jour. Sci. (2), xxxiv, pp. 73–78, with figs. in the text.

Newberry, J. S.—Continued. 1868 A

On some fossil reptiles and fishes from the Carboniferous strata of Ohio, Kentucky, and Illinois.

Proc. Amer. Assoc. Adv. Sci., 16th meeting, Burlington, Vt., 1867, pp. 144-146. Abstract.

—— 1868 B

On some remarkable fossil fishes discovered by Rev. H. Herzer, in the Black shale (Devonian) at Delaware, Ohio.

Proc. Amer. Assoc. Adv. Sci., 16th meeting, Buffalo, 1867, pp. 146-147, with two woodcuts.

Describes *Dinichthys herzeri*.

—— 1870 A

The geological position of the remains of elephant and mastodon in North America.

Proc. Lyc. Nat. Hist. N. Y., i, pp. 77-84.

—— 1870 B

Fossil fishes from the Devonian rocks of Ohio.

Proc. Lyc. Nat. Hist. N. Y., i, pp. 152-153.

—— 1870 C

Remarks on the fossil skull of a walrus found at Long Branch.

Proc. Lyc. Nat. Hist. N. Y., i, p. 75.

Recorded as belonging to *Trichechus rosmarus*.

—— 1871 A

Fossils from the phosphatic beds of South Carolina.

Proc. Lyc. Nat. Hist. N. Y., i, pp. 240-241.

Brief mention of a few species of vertebrates.

—— 1873 A

The classification and geological distribution of our fossil fishes.

Report. Geol. Surv. Ohio, i, Part II, Palæontology, pp. 245-355, with pls. xxiv-xl.

—— 1873 B

Notes on the genus *Conchiopsis* Cope.

Proc. Acad. Nat. Sci. Phila., 1873, pp. 425-426.

—— 1873 C

Remarks reviewing the history of the class of fishes as traced on the older rocks of North America.

Proc. Lyc. Nat. Hist. N. Y., 2d ser., No. 2, March to June, pp. 25-28.

—— 1873 D

Specimens of *Cœlacanthus elegans* Newb. from the Coal-measures of Linton, Ohio.

Proc. Lyc. Nat. Hist. N. Y., 2d ser., No. 2, March to June, pp. 30-32.

Some general remarks on *Cœlacanthus*; no description of *C. elegans*.

Newberry, J. S.—Continued. 1874 A

[Remarks on *Castoroides ohioensis*].

Proc. Lyc. Nat. Hist. N. Y., 2d ser., No. 4, Jan. to June, pp. 92-93.

—— 1874 B

Description of the Linton coal bed.

Proc. Lyc. Nat. Hist. N. Y., 2d ser., No. 4, Jan. to June, pp. 134-135.

Contains mention of four genera of fishes found there.

—— 1874 C

Account of a second species of *Dinichthys* recently discovered in Ohio.

Proc. Lyc. Nat. Hist. N. Y., 2d ser., No. 4, Jan. to June, pp. 149-151.

Gives a description (not the earliest) of *Dinichthys terrelli*.

—— 1874 D

Skull of a walrus (*Trichechus rosmarus*).

Proc. Lyc. Nat. Hist. N. Y., 2d ser., No. 3, Oct. to Dec., 1873, p. 71.

Identification of a skull found in Accomac County, Va., a drawing of which was presented by Dr. R. P. Stevens.

—— 1874 E

Remarks on *Cœlacanthus elegans* and on Prof. Cope's genera *Conchiopsis* and *Peplorhina*.

Proc. Lyc. Nat. Hist. N. Y., 2d ser., No. 3, Oct. to Dec., 1873, pp. 76-77.

—— 1874 F

[Remarks on skulls of *Dicotyles compressus* found at Columbus, Ohio.]

Proc. Lyc. Nat. Hist. N. Y., 2d ser., No. 3, Oct. to Dec., 1873, pp. 77-78.

—— 1875 A

Descriptions of fossil fishes.

Report Geol. Surv. Ohio, ii. Part II, Palæontology, pp. 1-64, with pls. liv-lix.

Contains descriptions and figures of the fossil fishes of the Devonian and the Carboniferous formations of Ohio.

—— 1876 A

Descriptions of the Carboniferous and Triassic fossils collected on the San Juan Exploring Expedition under Capt. J. N. Macomb, U. S. Engineers.

Report of the Exploring Expedition from Santa Fe, N. Mex., to the junction of the Grand and Green rivers of the Great Colorado of the West, in 1859, under the command of Capt. J. N. Macomb, Washington, 1876, pp. 135-148, with pl. iii, figs. 1, 1a; 2-2f.

Describes *Deltodus mercurii* Newb., *Ptychodus whipplei* Marcou, and mentions finding of *Lamna texana* Roem., and *Oxyrhina mantelli* Ag.

Newberry, J. S.—Continued. 1877 A

Rhynchodus excavatus.

Geology of Wisconsin, survey of 1873–1877, ii, p. 397.

—— 1878 A

Descriptions of new palæozoic fishes.

Ann. N. Y. Acad. Sci., i, pp. 188–192.

Said to have been issued in 1879. Describes *Diplognathus mirabilis*, *Glyptopomus sayrei*, *Archæobatis gigas*, gen. nov., *Dinichthys minor*, *Ctenaacanthus compressus*, *Rhynchodus occidentalis*, and *R. excavatus*.

—— 1878 B

Description of new fossil fishes from the Trias of New Jersey and Connecticut.

Ann. N. Y. Acad. Sci., i, pp. 127–128.

Describes *Diplurus longicaudatus* gen. et sp. nov. and *Ptycholepis marshi* sp. nov.

—— 1879 A

[Letter to Prof. John Collett, describing a collection of remains of fossil fishes collected in Indiana.]

Report State geologist of Indiana for the years 1876, 1877, 1878. Indianapolis, Ind., 1879, pp. 341–349.

—— 1883 A

Some interesting remains of fossil fishes recently discovered.

Trans. N. Y. Acad. Sci., ii, pp. 144–147.

Describes new genus *Mylostoma* and the new species *M. variabilis* and *M. terrelli*.

—— 1883 B

The relations of *Dinichthys*, as shown by complete crania recently discovered by Mr. Jay Terrell in the Huron shale of Ohio.

Trans. N. Y. Acad. Sci., iii, p. 20.

A brief abstract.

—— 1884 A

On the recent discovery of new and remarkable fossil fishes in the Carboniferous and Devonian rocks of Ohio and Indiana.

Geol. Magazine (3), i, pp. 523–524.

—— 1884 B

Ctenacanthus wrighti n. sp.

Thirty-fifth Ann. Rept. N. Y. State Mus. Nat. Hist., p. 206, pl. 16, fig. 12.

—— 1885 A

On the recent discovery of new and remarkable fossil fishes in the Carboniferous and Devonian rocks of Ohio and Indiana.

Report Brit. Assoc. Adv. Sci., 54th meeting, Montreal, 1884, pp. 724–725.

Same as Newberry, J. S., 1884 A.

Newberry, J. S.—Continued. 1885 B

Description of some gigantic Placoderm fishes recently discovered in the Devonian of Ohio.

Trans. N. Y. Acad. Sci., v, pp. 25–28.

—— 1885 C

Descriptions of some peculiar screw-like fossils from the Chemung rocks.

Ann. N. Y. Acad. Sci., xviii, pp. 217–220, with pl. xviii.

Describes new genus *Spiraxis*, with species *major* and *randalli*.

—— 1885 D

Sur les restes de grands poissons fossils récemment découverts dans les roches devoniennes de l'Amerique du Nord.

Compte rend. Cong. Géol. Internat. Berlin, 1885, pp. 273–276,

Cited from a reprint with pp. 11–14.

—— 1887 A

The fauna and flora of the Trias of New Jersey and the Connecticut Valley.

Trans. N. Y. Acad. Sci., vi, pp. 124–128.

Contains a list of the fishes found in the Triassic rocks.

—— 1887 B

Cœlosteus, a new genus of fishes from the Lower Carboniferous limestones of Illinois.

Trans. N. Y. Acad. Sci., vi, pp. 137–138.

Describes *Cœlosteus ferox* gen. et sp. nov.

—— 1887 C

Description of a new species of *Titanichthys.*

Trans. N. Y. Acad. Sci., vi, pp. 164–165.

An abstract describing *Titanichthys clarkii.*

—— 1888 A

Fossil fishes and fossil plants of the Triassic rocks of New Jersey and the Connecticut valley.

Mon. U. S. Geol. Surv., xiv, pp. i–xiv, 1–152, with pls. i–xxvi.

For review of by A. S. Woodward, see Nature, xliii, pp. 366–367.

—— 1888 B

On the structure and relations of *Edestus*, with a description of a gigantic new species.

Ann. N. Y. Acad. Sci., iv, pp. 113–122, with pls. iv–vi.

Describes *Edestus giganteus* sp. nov.

—— 1888 C

Note on a new species of *Rhizodus*, from the St. Louis limestone at Alton, Ill.

Trans. N. Y. Acad. Sci., vii, p. 165.

Describes *Rhizodus anceps* sp. nov.

Newberry, J. S.—Continued. 1888 D

On the fossil fishes of the Erie shale of Ohio.

Trans. N. Y. Acad. Sci., vii, pp. 178-180.

An abstract presenting descriptions of *Cladodus kepleri*, *Actinophorus clarkii*, *Dinichthys curtus*, *D. tuberculatus*.

—— 1889 A

The Paleozoic fishes of North America.

Mon. U. S. Geol. Surv., J. W. Powell, Director, xvi, pp. 1-340, pls. i-liii.

Although the imprint of the title-page of this monograph gives 1889 as year of printing, it was not issued until August, 1890.

A review of this monograph by A. S. Woodward appeared in Nature, xliii, p. 146, 1890.

—— 1890 A

On the genus *Oracanthus* Ag.

Trans. N. Y. Acad. Sci., ix, pp. 131-133.

Abstract.

—— 1892 A

American Devonian fishes found in Belgium.

Amer. Naturalist, xxvi, p. 1025.

From Ann. Soc. Géol. Belgique, xvi.

Dinichthys pustulosus (=*D. tuberculatus*) and *D. terrelli* are reported from Belgium. The determinations were made by Dr. Newberry. The paper above quoted is a translation of a paper by Lohest.

—— 1897 A

New species and a new genus of American Palæozoic fishes, together with notes on the genera *Oracanthus*, *Dactylodus*, *Polyrhizodus*, *Sandalodus*, *Deltodus*.

Trans. N. Y. Acad. Sci., xvi, pp. 282-304, with pls. xxii-xxvi. Edited by Bashford Dean.

In this paper there are described 16 new species, most of them figured. The new genus *Stenognathus* is proposed, having as type *Dinichthys corrugatus*.

Newberry, J. S., and **Worthen**, A. H. 1866 A

Descriptions of new species of vertebrates, mainly from the Subcarboniferous limestone and Coal Measures of Illinois.

Geol. Surv. Illinois, A. H. Worthen, Director, ii, 1866, pp. 9-134, pls. i-xiii.

—— —— 1870 A

Descriptions of, fossil vertebrates.

Geol. Surv. Illinois. A. H. Worthen, Director, iv, 1870, pp. 347-374, with pls. i-iv.

Contains descriptions and figures of fossil fishes from the Carboniferous and Subcarboniferous formations of Illinois.

Newton, Alfred. 1861 A

Abstract of Mr. J. Wolley's researches in Iceland respecting the gare-fowl, or great auk (*Alca impennis*, Linn.).

The Ibis (1), iii, pp. 374-399.

—— 1868 A

Remarks on Professor Huxley's classification of birds.

The Ibis (2), iv, pp. 85-96.

—— 1870 A

On existing remains of the gare-fowl (*Alca impennis*).

The Ibis (2), vi, pp. 257-261.

—— 1875 A

Birds.

Encyclop. Brit., ed. 9, iii, pp. 728-778, with figs. 38-49.

This portion of the article on birds is devoted mainly to avian biology. Pages 728-736 deal briefly with fossil birds, subfossil birds, birds recently exterminated, and birds partially exterminated.

—— 1879 A

Gare-fowl.

Encyclop. Brit., ed. 9, x, pp. 78-80, with 1 fig.

The author cites the principal literature bearing on the history and structure of this bird.

—— 1896 A

A dictionary of birds. By Alfred Newton, assisted by Hans Gadow; with contributions from Richard Lydekker, B. A., F. R. S., Charles S. Roy, M. A., F. R. S., and Robert Shufeldt, M. D., late United States Army.

London, Adam and Charles Black, 1893-1896, pp; i-xii; 1-1088, with numerous text figs.

In the introduction (pp. 1-124) Newton discusses the history of the science of ornithology and schemes of classification. Gadow has articles on the skeleton.

Newton, E. T. 1877 A

On the remains of *Hypsodon*, *Portheus*, and *Ichthyodectes* from British Cretaceous strata, with descriptions of new species.

Quart. Jour. Geol. Soc., xxxiii, pp. 505-523, with pl. xxii and 1 text figs.

—— 1878 A

Remarks on *Saurocephalus*, and on the species which have been referred to that genus.

Quart. Jour. Geol. Soc., xxxiv, pp. 786-796.

Contains list of genera and species which have been referred to *Saurocephalus*, etc., and bibliography.

Newton, E. T.—Continued. 1878 B

Description of a new fish from the lower Chalk of Dover.

Quart. Jour. Geol. Soc., xxxiv, pp. 439–446, with pl. xix.

Discusses the genera *Portheus*, *Daptinus*, and *Ichthyodectes*, and has description and figures of *Daptinus intermedius*.

—— 1878 C

The chimæroid fishes of the British Cretaceous rocks.

Mem. Geol. Surv. United Kingdom, Mon. iv, pp. 1–50, with pls. i–xii.

—— 1886 A

On the remains of a gigantic species of bird (*Gastornis klaassenii* n. sp.), from the lower Eocene beds near Croydon.

Trans. Zool. Soc. Lond., xii, pp. 143–160, with pls. xxviii, xxix.

—— 1888 A

Notes on pterodactyls.

Proc. Geologists' Assoc., x, pp. 406–424, with 13 figs. in the text.

—— 1889 A

A contribution to the history of Eocene Siluroid fishes.

Proc. Zool. Soc. Lond., 1889, pp. 201–207, with pl. xxi.

Contains on pp. 206–207 a list of papers on fossil Siluroid fishes.

—— 1889 B

On the skull, brain, and auditory organ of a new species of pterosaurian (*Scaphognathus purdoni*) from the Upper Lias, near Whitby, Yorkshire.

Philos. Trans. Royal Soc. Lond., clxxix, pp. 503–537, pls. lxxvii, lxxviii.

—— 1892 A

Note on a new species of *Onychodus* from the lower Old Red sandstone of Fairfax.

Geol. Magazine (3), ix, pp. 51–52, with 1 fig. in the text.

Contains list of six known species of *Onychodus*.

—— 1899 A

On the remains of *Amia*, from Oligocene strata in the Isle of Wight.

Quart. Jour. Geol. Soc., lv, pp. 1–10, with pl. i.

Describes two new species and gives list of known species.

Nicholson, Henry Allen, and **Lydekker**, Richard. 1889 A

A manual of palæontology for the use of students, with a general introduction on the principles of palæontology. Third edition.

Vol. ii, pp. i–xi, 889–1624, with figs. 813–1354.

Vol. i of this work treats of the fossil invertebrates; pp. 1475–1560 of vol. ii treats of fossil plants.

Nickerson, W. S. 1893 A

The development of the scales of *Lepidosteus*.

Bull. Mus. Comp. Zool., xxiv, pp. 115–139, with pls. i–iv.

Nitsche, H. 1891 A

Studien über das Elchwild, *Cervus alces* L. A. Zahnbildung. B. Geweihbildung. C. Bau der Läufe.

Zoolog. Anzeiger, xiv, pp. 181–188, 189–191.

—— 1899 A

Ueber die Hirschgeweihe mit mehr als zwei Stangen, und die Hörner Wiederkäuer im Allgemeinen.

Proc. 4th Internat. Cong. Zoology, Cambridge, Eng., 1898, pp. 185–187.

Noack, Th. 1894 A

Bemerkungen über die Caniden.

Der Zoolog. Garten, 1894, pp. 165–170; 195–198; 241–246; 260–265.

Nodot, L. 1855 A

Description d'un nouveau genre d'Édentaté fossile renfermant plusieurs espèces voisines des glyptodontes et classification méthodique de treize espèces appartenant a ces deux genres.

Comptes rend. Acad. Sci. Paris, xli, pt. 2, pp. 335–338.

Describes new genus *Schistopleurum*.

Noetling, Fritz. 1885 A

Die Fauna des samländischen Tertiärs.

Abhandl. zur Specialkarte von Preussen und den Thüringischen Staaten, vi, pt. iii, pp. 1–107, with pls. i–xi.

Nopcsa, Franz B. 1899 A

Dinosaurierreste aus Siebenbürgen (Schädel von *Limnosaurus transsylvanicus* nov. gen. et spec.).

Denkschr. k. Akad. Wissensch. Wien, math.-naturw. Cl., lxviii, pp. 555–59, with pls. i–vi.

Contains a list of Hadrosaurs.

Nordmann, Alex. 1862 A

Beiträge zur Kenntniss des Knochenbaues der *Rhytina stelleri*.

Acta Soc. Sci. Fennicæ, vii, pp. 1–33, with pls. i–v.

Norwood, J. G., and **Owen**, D. D.
1846 A

Description of a new fossil fish from the Palæozoic rocks of Indiana.

Amer. Jour. Sci. (2), i, pp. 367–371, with 2 woodcuts.

—— —— 1846 B

Description of *Macropetalichthys raphidolabis.*

Proc. Boston Soc. Nat. Hist. ii, p. 116.

Oldham, Thomas. 1859 A

On some fossil fish-teeth of the genus *Ceratodus*, from Maledi, south of Nagpur.

Mem. Geol. Surv. India, i, pp. 295–309, pls. xiv–xvi.

Orr, Henry. 1885 A

Beitrag zur Phylogenie der Ganoiden. Inaugural-Dissertation, Jena.

Pp. 1–37, with 2 figs. in the text.

Orton, Edw. 1891 A

On the occurrence of *Megalonyx jeffersoni* in central Ohio.

Bull. Geol. Soc. Amer., ii, p. 635.

Orton, James. 1869 A

The great auk.

Amer. Naturalist, iii, pp. 539–542, with 1 fig.

Osawa, Gakutaro. 1898 A

Verhandl. Anat. Gesellsch., 12th meeting, Kiel, 1898, pp. 100–105, with 4 figs. in the text.

Osborn, H. F. 1881 A

A memoir upon *Loxolophodon* and *Uintatherium*, two genera of the suborder *Dinocerata.*

Contrib. E. M. Mus. Geol. and Arch. of the College of New Jersey [Princeton], i, pp. 1–54, pls. i–iv, and map.

Notices of this paper, with 2 figs. of *L. cornutus*, appeared in Amer. Naturalist, xv, p. 888; Amer. Jour. Sci., xxii, p. 235.

—— 1883 A

Achænodon, an Eocene bunodont.

Contrib. E. M. Mus. Geol. and Arch.; Princeton Coll., Bull. No. 3, pp. 23–35, with pl. vi, and 8 text figs.

—— 1886 A

A new mammal from the American Triassic.

Science, viii, p. 540, with 1 woodcut.

Describes new genus and species, *Microconodon tenuirostris.*

—— 1886 B

Observations upon the Triassic mammals *Dromatherium* and *Microconodon.*

Proc. Acad. Nat. Sci. Phila., 1886, pp. 359–363, with 4 woodcuts in the text.

Osborn, H. F.—Continued. 1887 A

A pineal eye in the Mesozoic mammals.

Science, ix, p. 92.

—— 1887 B

The pineal eye in *Tritylodon.*

Science, ix, p. 114, with 1 woodcut.

—— 1887 C

No parietal foramen in *Tritylodon.*

Science, ix, p. 538.

—— 1887 D

The origin of the tritubercular type of mammalian dentition.

Science, x, p. 300.

—— 1887 E

The Triassic mammals *Dromatherium* and *Microconodon.*

Proc. Amer. Philos. Soc., xxiv, pp. 109–111, with 1 pl.

—— 1887 F

On the structure and classification of the Mesozoic *Mammalia.*

Proc. Acad. Nat. Sci. Phila., 1887, pp. 282–292, with 3 figs. in the text.

Review of, in Geol. Magazine, 1888, v, p. 132. Also in Archiv f. Anthrop., xix, pp. 135–141.

—— 1887 G

Note on the genus *Athrodon.*

Amer. Naturalist, xxi, p. 1020.

Athrodon preoccupied, *Kurtodon* substituted.

—— 1888 A

Additional observations upon the structure and classification of the Mesozoic *Mammalia.*

Proc. Acad. Nat. Sci. Phila., 1888, pp. 292–301, with 2 figs. in the text.

—— 1888 B

The mylohyoid groove in the Mesozoic and recent *Mammalia.*

Amer. Naturalist, xxii, pp. 75–76.

—— 1888 C

A review of Mr. Lydekker's arrangement of the Mesozoic *Mammalia.*

Amer. Naturalist, xxii, pp. 232–236.

—— 1888 D

Chalicotherium and *Macrotherium.*

Amer. Naturalist, xxii, pp. 728–729.

—— 1888 E

The nomenclature of the mammalian molar cusps.

Amer. Naturalist, xxii, pp. 926–928.

—— 1888 F

The evolution of the mammalian molars to and from the tritubercular type.

Amer. Naturalist, xxii, pp. 1067–1079, pls. xv, xvi, and 1 woodcut.

Reviewed by M. Schlosser in Archiv f. Anthrop., xix, pp. 157–159.

Osborn, H. F.—Continued. 1888 G

On the structure and classification of the Mesozoic *Mammalia*.

Jour. Acad. Nat. Sci. Phila. (2), ix, pp. 186–265, pls. viii, ix, and 30 figs. in the text.

For review see Nature, xxxviii, pp. 611–614; Amer. Naturalist, xxii, pp. 723–724. Also, H. Winge, 1893 C, p. 117.

—— 1888 H

The characters and phylogeny of the *Amblypoda*.

Science (2), vii, p. 226.

Abstract of paper read before Amer. Morpholog. Society.

—— 1889 A

The evolution of the mammalian teeth to and from the tritubercular type.

Report Brit. Assoc. Adv. Sci., 58th meeting, Bath, 1888, p. 660.

Abstract of paper read before Brit. Assoc. Adv. Sci., and published in full in Amer. Naturalist, 1888, p. 1067.

—— 1890 A

The paleontological evidence for the transmission of acquired characters.

Science, xv, pp. 110–111.

See Amer. Naturalist, xxiii, pp. 559–566. Nature, xli, pp. 227–228; Rep. Brit. Assoc. Adv. Sci. for 1889.

Discusses the evolution of the teeth of *Mammalia*.

—— 1890 B

The palæontological evidence for the transmission of acquired characters.

Proc. Amer. Assoc. Adv. Sci., 38th meeting, Toronto, 1889, pp. 273–276.

—— 1890 C

A review of the Cernaysian *Mammalia*.

Proc. Acad. Nat. Sci. Phila., 1890, pp. 51–62, with 6 figs. in text.

Review by M. Schlosser in Archiv f. Anthrop, xx, pp. 111–112.

—— 1890 D

The *Mammalia* of the Uinta formation. Part III. The *Perissodactyla*. Part IV. The evolution of the ungulate foot.

Trans. Amer. Philos. Soc., xvi, pp. 505–572, with pls. viii–xi, and 12 figs. in the text.

This forms a portion of a joint paper by Professors Scott and Osborn. See Scott, W. B., 1890 A, and Scott and Osborn, 1890 A.

For review by R. Lydekker, see Nature, xliii, p. 177.

—— 1891 A

A review of the Cretaceous *Mammalia*.

Proc. Acad. Nat. Sci. Phila., 1891, pp. 124–135, with 8 figs. in the text.

See also Amer. Naturalist, xxv, pp. 595–611, figs. 1–12.

Osborn, H. F.—Continued. 1891 B

A review of the discovery of the Cretaceous *Mammalia*.

Amer. Naturalist, xxv, pp. 44–45.

Abstract of a review of papers here entered under titles of Marsh, O. C., 1889 D, and Marsh, O. C., 1889 F.

—— 1891 C

A reply to Professor Marsh's "Note on Mesozoic *Mammalia*."

Amer. Naturalist, xxv, pp. 775–783, with 1 fig. in the text.

Review by M. Schlosser in Archiv f. Anthrop., xxii, p. 118.

—— 1891 D

Meniscotheriidæ and *Chalicotheriidæ*.

Amer. Naturalist, xxv, pp. 911–912.

—— 1891 E

A review of the "Discovery of the Cretaceous *Mammalia*."

Amer. Naturalist, xxv, pp. 595–611, with 12 figs. in the text.

This is a review of papers by Professor Marsh, and is a reprint, with slight changes and additions, of Osborn, H. F., 1891 A.

Abstract in Archiv f. Anthrop., xxii, pp. 117–118.

—— 1892 A

Palæonictis in the American Lower Eocene.

Nature, xlvi, p. 30.

—— 1892 B

What is *Lophiodon?*

Amer. Naturalist, xxvi, pp. 763–765.

—— 1892 C

The ancestry of *Chalicotherium*.

Science, xix, p. 276.

—— 1892 D

A reply to Professor Marsh's "Note on Mesozoic *Mammalia*."

Proc. Amer. Assoc. Adv. Sci., 40th meeting, Washington, 1891, p. 290.

Abstract of Osborn, H. F., 1891 C.

—— 1892 E

Nomenclature of mammalian molar cusps.

Amer. Naturalist, xxvi, pp. 436–437.

—— 1892 F

The contemporary evolution of man.

Amer. Naturalist, xxvi, pp. 455–481, 537–567.

Reviewed by M. Schlosser in Archiv f. Anthrop., xxiii, p. 152.

—— 1892 G

Is *Meniscotherium* a member of the *Chalicotherioidea?*

Amer. Naturalist, xxvi, pp. 506–509, with 4 figs. in the text.

Osborn, H. F.—Continued. 1892 H

Odontogenesis in the ungulates.

Amer. Naturalist, xxvi, pp. 621–623.

A review of paper by Julius Taeker, in Morpholog. Jahrbuch, xv, p. 308.

—— 1892 I

The history and homologies of the human molar cusps.

Anatom. Anzeiger, vii, pp. 740–747, with 12 text figs.

A review of the contributions of Dr. A. Fleischmann, Dr. Julius Taeker, and Dr. Carl Röse.

—— 1893 A

The rise of the *Mammalia* in North America.

Amer. Jour. Sci., (3) xlvi, pp. 379–392; 448–466, with pl. xi and 5 figs. in the text.

For review of this paper, see Nature, xlix, pp. 235 and 257.

—— 1893 B

Fossil mammals of the Upper Cretaceous beds: I. The multituberculates; II. The trituberculates; III. Faunal relations of the Laramie mammals.

Bull. Amer. Mus. Nat. Hist., v, pp. 311–330, with pls. vii, viii, and 3 text figs.

Abstract of, by M. Schlosser, in Archiv f. Anthrop., xxiv, pp. 126–127.

—— 1893 C

Aceratherium tridactylum from the Lower Miocene of Dakota.

Bull. Amer. Mus. Nat. Hist., v, pp. 85–86.

—— 1893 D

The rise of the *Mammalia* in North America.

Studies from the biological laboratories of Columbia College; Zoology. Ginn & Co., Boston, 1893. Pp. 1–45, with 1 pl. and 5 text figs.

Vice-presidential address before the Amer. Assoc. for the Advance of Science, Madison, Wis., Aug. 17, 1893. Same as Osborn, 1893 A.

Abstract of, by M. Schlosser, in Archiv f. Anthrop., xxiv, pp. 123–124.

—— 1893 E

The collection of fossil mammals in the American Museum of Natural History, New York.

Science, xxi, p. 261.

—— 1893 F

The *Ancylopoda*, *Chalicotherium*, and *Artionyx*.

Amer. Naturalist, xxvii, pp. 118–133, with 4 figs. in the text.

Abstract of, by M. Schlosser, in Archiv f. Anthrop., xxiv, pp. 125–126.

—— 1893 G

Recent researches upon the succession of the teeth in mammals.

Amer. Naturalist, xxvii, pp. 493–508.

Noticed by M. Schlosser, in Archiv f. Anthrop., xxiv, p. 136.

Osborn, H. F.—Continued. 1893 H

Sur la découverte du *Palæonictis* en Amérique.

Bull. Soc. Géol. France (3), xx, pp. 434–436, with 1 fig. in the text.

Describes the new species *P. occidentalis* Osb.

—— 1893 I

Protoceras, the new artiodactyle.

Nature, xlvii, pp. 321–322, with 8 figs. in the text.

—— 1893 J

Artionyx, a clawed artiodactyle.

Nature, xlvii, pp. 610–611, with 3 figs. in the text.

—— 1893 K

Foot of *Artionyx*.

Anatom. Anzeiger, viii, p. 368.

Report of meeting of N. Y. Acad. Sci.

—— 1893 L

Protoceras celer.

Anatom. Anzeiger, viii, pp. 127–128.

In reports of meeting of N. Y. Acad. Sci.

—— 1894 A

A division of the Eutherian mammals into the *Mesoplacentalia* and *Cenoplacentalia*.

Trans. N. Y. Acad. Sci., xiii, pp. 234–237.

—— 1895 A

Fossil mammals of the Uinta Basin.

Bull. Amer. Mus. Nat. Hist., vii, pp. 71–105, with 17 figs. in the text.

Reviewed by M. Schlosser in Archiv f. Anthrop., xxv., pp. 181–182.

—— 1895 B

Vertebrate paleontology in the American Museum.

Science (2), ii, pp. 178–179.

—— 1895 C

The history of the cusps of the human molar teeth.

Internat. Dental Jour., 1895.

Quoted from reprint, pp. 1–14, with pl. AA and text figs. A–D.

—— 1896 A

Titanotheres of the American Museum of Natural History.

Amer. Naturalist, xxx, p. 162.

Secretary's report of the session of the New York Academy of Science, Dec. 9, 1895. Also found in Anatom. Anzeiger, xi, p. 512 and Zoolog. Anzeiger, xix, p. 48.

—— 1896 B

The cranial evolution of *Titanotherium*.

Bull. Amer. Mus. Nat. Hist., viii, pp. 157–197, with pls. iii and iv and 15 figs. in the text.

Notice of this paper by M. Schlosser in Neues Jahrb. Mineral., 1899, ii, pp. 319–321, and in Archiv f. Anthrop., xxv, p. 216.

Osborn, H. F.—Continued. 1896 C

Prehistoric quadrupeds of the Rockies.

The Century Magazine, lii, pp. 705–715, with 8 engravings illustrating restorations of fossil mammals.

—— 1897 A

Lambdotherium not related to *Palæosyops* or the Titanotheres.

Amer. Naturalist, xxxi, pp. 55–57.

—— 1897 B

Reconstruction of *Phenacodus primævus*, the most primitive ungulate.

Amer. Naturalist, xxxi, p. 980.

A synopsis of a paper read before the Brit. Assoc. Adv. Sci. at Toronto, 1897.

An abstract of this paper is found on p. 684 of the report of the meeting.

—— 1897 C

Trituberculy: A review dedicated to the late Professor Cope.

Amer. Naturalist, xxxi, pp. 993–1016.

Appended is a bibliography of the subject. The paper is reviewed by M. Schlosser in Neues Jahrb. Mineral, 1901, i, p. 151.

—— 1897 D

Report on the phylogeny of the early Eocene Titanotheres.

Anatom. Anzeiger, xiii, p. 551.

Report of paper read before New York Biological Society, Apr. 5, 1897. See also Science (2), vi, p. 107.

—— 1897 E

The origin of the teeth of the *Mammalia*.

Science (2), v, pp. 576–577.

—— 1897 F

The *Ganodonta*, or primitive Edentates with enameled teeth.

Science (2), v, pp. 611–612.

—— 1897 G

The Huerfano Lake basin, southern Colorado, and its Wind River and Bridger fauna.

Bull. Amer. Mus. Nat. Hist., ix, pp. 247–258.

Brief review in Neues Jahrb. Mineral., 1900, p. 132.

—— 1898 A

Paleontological problems.

Science (2), vii, pp. 145–147.

—— 1898 B

Origin of the *Mammalia*.

Science (2), vii, pp. 176–178.

Discussion before Amer. Soc. Naturalists.

—— 1898 C

A complete skeleton of *Teleoceras*, the true rhinoceros from the upper Miocene of Kansas.

Science (2), vii, pp. 554–557, with 1 fig. in the text.

Osborn, H. F.—Continued. 1898 D

The life and works of Cope, illustrating the training of a naturalist and the essential characteristics of a great comparative anatomist.

Preface to second edition of Professor Cope's Syllabus of Lectures on the *Vertebrata*, pp. iii–xxxv.

—— 1898 E

A complete skeleton of *Teleoceras fossiger*. Notes upon the growth and sexual characters of this species.

Bull. Amer. Mus. Nat. Hist., x, pp. 51–59, with pls iv, iv A.

—— 1898 F

A complete skeleton of *Coryphodon radians*.

Bull. Amer. Mus. Nat. Hist., x, pp. 81–91, with pl. x and 2 figs. in the text.

—— 1898 G

Remounted skeleton of *Phenacodus primævus*. Comparison with *Euprotogonia*.

Bull. Mus. Nat. Hist., x, pp. 159–164, with pl. xii and 4 text figs.

—— 1898 H

Evolution of the *Amblypoda*. Part I. *Taligrada* and *Pantodonta*.

Bull. Amer. Mus. Nat. Hist., x, pp. 169–218, with 29 figs. in the text.

—— 1898 I

The extinct rhinoceroses.

Mem. Amer. Mus. Nat. Hist., i, pp. 75–164, with pls. xiiA–xx, with 49 figs. in the text.

Pp. 121-125 of this memoir are devoted to the bibliography of the rhinoceroses.

A notice of this memoir is found in Natural Science, 1898, xiii, pp. 151–159.

—— 1898 J

Additional characters of the great herbivorous dinosaur *Camarasaurus*.

Bull. Amer. Mus. Nat. Hist., x, pp. 219–233, with 13 figs. in the text.

—— 1898 K

Paleontological notes.

Science (2), vii, pp. 164–165.

—— 1898 L

A placental marsupial.

Science (2), vii, pp. 454–456, with 1 fig. in the text.

—— 1898 M

A complete skeleton of *Coryphodon radians*. Notes upon the locomotion of this animal.

Science (2), vii, pp. 585–588, with 1 fig. in the text.

Osborn, H. F.—Continued. 1898 N

Models of extinct vertebrates.

Science (2), vii, pp. 841–845, with text figs. 1–4.

—— 1898 O

[Origin of *Mammalia*.]

Science (2), viii, p. 358.

Abstract of remarks at International Congress of Zoologists at Cambridge, England.

—— 1898 P

On the presence of a frontal horn in *Aceratherium incisivum* Kaup.

Science (2), viii, p. 880.

A brief abstract. *Aceratherium* not a hornless rhinoceros.

—— 1898 Q

Casts, models, photographs, and restorations of fossil vertebrates.

Pamphlet issued by Department of Vertebrate Palæontology, Amer. Mus. Nat. Hist., pp. 1–21, with 7 illus.

Remarks on this pamphlet are found in Natural Science, 1898, xiii, p. 290.

—— 1898 R

The origin of *Mammalia*.

Amer. Naturalist, xxxii, pp. 309–334, with 14 text figs.

Reviewed in Neues Jahrb. Mineral., 1900, ii, pp. 135–138.

—— 1899 A

Frontal horn on *Aceratherium incisivum*. Relation of this type to *Elasmotherium*.

Science (2), ix, pp. 161–162, with pl. i.

—— 1899 B

The origin of mammals.

Amer. Jour. Sci. (4), vii, pp. 92–96.

—— 1899 C

Additional characters of *Diplodocus*.

Science (2), ix, pp. 315–316.

—— 1899 D

A complete mosasaur skeleton, osseous and cartilaginous.

Mem. Amer. Mus. Nat. Hist., i, pp. 167–188, with pls. xxi–xxiii and 13 text figs.

See also, for extract from this paper, Science (2), x, 1899, pp. 919–925, figs. 1–3; for review, Neues Jahrb. Mineral., 1901, i, p. 156.

—— 1899 E

A skeleton of *Diplodocus*.

Mem. Amer. Mus. Nat. Hist., i, pp. 191–214, with pls. xxiv–xxviii and 14 text figs.

An extract of this paper was published in Science (2), x, pp. 870–874, with fig. 1.

Reviewed in Neues Jahrb. Mineral., 1901, i, p. 156.

Osborn, H. F.—Continued. 1899 F

Upon the structure of *Tylosaurus dyspelor*, including the cartilaginous sternum.

Science (2), ix, pp. 912–913.

Brief synopsis of paper read before New York Academy of Sciences. See Osborn, H. F., 1899 D.

—— 1899 G

The Newburgh mastodon.

Science (2), x, p. 539.

—— 1899 H

Fore and hind limbs of carnivorous dinosaurs from the Jurassic of Wyoming. Dinosaur contributions, No. 3.

Bull. Amer. Mus. Nat. Hist., xii, pp. 161–172, with 7 figs. in the text.

Abstract in Neues Jahrb. Mineral., 1901, ii, p. 305.

—— 1899 I

[Review of Arthur Smith Woodward's Outlines of vertebrate palæontology for students of zoology.]

Natural Science, xiv, pp. 156–159.

—— 1900 A

Intercentra and hypapophyses in the cervical region of mosasaurs, lizards, and *Sphenodon*.

Amer. Naturalist, xxxiv, pp. 1–7, with 4 figs. in the text.

An abstract of this paper was published in Science, x, 1899, p. 896.

—— 1900 B

Recent zoöpaleontology.

Science (2), xi, pp. 115–116.

—— 1900 C

The geological and faunal relations of Europe and America during the Tertiary period and the theory of the successive invasions of an African fauna.

Science (2), xi, pp. 561–574.

—— 1900 D

Recent zoöpaleontology.

Science (2), xii, pp. 767–769, with 1 text fig.

Refers to finding of *Trigonias osborni* Lucas, and *Archelon* Wieland.

—— 1900 E

Phylogeny of the rhinoceroses of Europe.

Science (2), xii, p. 885.

An abstract of a paper read before the N. Y. Acad. Sci.

—— 1900 F

The angulation of the limbs of *Proboscidia*, *Dinocerata*, and other quadrupeds in adaptation to weight.

Amer. Naturalist, xxxiv, pp. 89–94, with 7 figs. in the text.

Osborn, H. F.—Continued. 1900 G

Reconsideration of the evidence for a common dinosaur-avian stem in the Permian.

Amer. Naturalist, xxxiv, pp. 777-799, with 12 figs. in the text.

—— 1900 H

Phylogeny of the rhinoceroses of Europe.

Bull. Amer. Mus. Nat. Hist., xiii, pp. 229-267, with 16 figs. in the text.

—— 1900 I

Oxyæna and *Patriofelis* restudied as terrestrial creodonts.

Bull. Amer. Mus. Nat. Hist., xiii, pp. 269-279, with pls. xviii, xix, and 8 figs. in the text.

—— 1900 J

Origin of the *Mammalia*. III. Occipital condyles of reptilian tripartite type.

Amer. Naturalist, xxxiv, pp. 943-947, with 3 figs in the text.

—— 1900 K

Correlation between Tertiary mammal horizons of Europe and America. An introduction to the more exact investigation of Tertiary zoögeography. Preliminary study with third trial sheet.

Ann. N. Y. Acad. Sci., xiii, pp. 1-72.

Pp. 59-64 are occupied by a bibliography of the subject; pp. 65-72 by a list of the scientific publications of the author.

Osborn, H. F. and **Earle**, Charles. 1895 A

Fossil mammals of the Puerco beds. Collection of 1892.

Bull. Amer. Mus. Nat. Hist., vii, pp. 1-70, with 21 figs. in the text.

Reviewed by W. B. Scott in Science (2), i, p. 660, and by M. Schlosser in Archiv f. Anthrop., xxv, pp. 176-179.

Osborn, H. F., **Scott**, W. B., and **Speir**, Francis, jr. 1878 A

Palæontological report of the Princeton scientific expedition of 1877.

Contrib. Mus. Geol. and Arch., Princeton College, No. 1, pp. 1-107, with pls. A, i-x.

Followed by systematic catalogue of the Eocene vertebrates of Wyoming, pp. 131-146.

Osborn, H. F., and **Speir**, F. jr. 1879 A

The lower jaw of *Loxolophodon*.

Amer. Jour. Sci., xvii, 304-309, with pl. ii.

Osborn, H. F., and **Wortman**, J. L. 1892 A

Fossil mammals of the Wahsatch and Wind River beds. Collection of 1891.

Bull. Amer. Mus. Nat. Hist., iv, pp. 80-147 with pl. iv and 18 figs. in text.

I. Homologies and nomenclature of the mammalian molar cusps (H. F. O.), p. 84.

II. The classification of the *Perissodactyla* (H. F. O.), p. 90.

III. The ancestry of the *Felidæ* (J. L. W.), p. 94.

IV. Taxonomy and morphology of the primates, creodonts, and ungulates; 1, Wahsatch; 2, Wind River (H. F. O.), p. 101.

V. Geological and geographical sketch of the Big Horn Basin (J. L. W.), p. 135.

VI. Narrative of the expedition (J. L. W.), p. 144.

For remarks on portions of this paper see Natural Science, ii, pp. 404-405; also, for abstract, Archiv f. Anthrop., xxiii, pp. 136-138.

—— —— 1892 B

Characters of *Protoceras* (Marsh), the new artiodactyl from the Lower Miocene.

Bull. Amer. Mus. Nat. Hist., iv, pp. 351-371, figs. 1-6.

Abstract of, by M. Schlosser, in Archiv f. Anthrop., xxiii, pp. 135-136.

—— —— 1893 A

Artionyx, a new genus of *Ancylopoda*. Appendix [p. 17]: On the mechanics of the artiodactyl tarsus.

Bull. Amer. Mus. Nat. Hist., v, pp. 1-18, with 8 text figures.

Remarks on this paper in Natural Science, ii, p. 326.

—— —— 1894 A

Fossil mammals of the Lower Miocene White River beds. Collection of 1892.

Bull. Amer. Mus. Nat. Hist., vi, pp. 199-228, with pls. ii and iii, and 8 figs. in the text.

Abstract of, by M. Schlosser in Archiv f. Anthrop., xxiv, pp. 167-168.

—— —— 1895 A

Perissodactyls of the Lower Miocene White River beds.

Bull. Amer. Mus. Nat. Hist., vii, pp. 343-375, with pls. viii-xi and 12 figs. in the text.

Reviewed by M. Schlosser in Archiv f. Anthrop., xxv, pp. 179-181.

Owen, David Dale. 1842 A

Regarding human footprints in solid limestone.

Amer. Jour. Sci., xliii, pp. 14-32, with 1 pl.

Owen, David Dale—Continued. 1857 A

Report of the geological survey in Kentucky, made during the years 1854 and 1855.

Amer. Jour. Sci. (2), xxiii, pp. 272-276.

An editorial notice of the above report made by D. D. Owen.

See also **Norwood** and **Owen.**

Owen, D. D., **Norwood**, J. G., and **Evans**, John. 1850 A

Notice of fossil remains brought by Mr. J. Evans from the Mauvais Terres, or bad lands of White River, 150 miles west of the Missouri.

Proc. Acad. Nat. Sci., v, pp. 66-67.

Owen, Richard. 1832 A

On the anatomy of the weasel-headed armadillo (*Dasypus 6-cinctus* L.).

Proc. Zool. Soc. Lond., pt. ii, 1832, pp. 134-138.

—— 1835 A

On the comparative osteology of the orang and chimpanzee.

Proc. Zool. Soc. Lond., 1835, pt. iii, pp. 30-40.

—— 1838 A

On the osteology of the *Marsupialia.*

Proc. Zool. Soc. Lond., 1838, pt. vi, pp. 120-147.

—— 1838 B

On the dislocation of the tail at a certain point, observable in the skeletons of many *Ichthyosauri.*

Proc. Geol. Soc. Lond., ii, pp. 660-662.

—— 1839 A

Outlines of a classification of the *Marsupialia.*

Proc. Zool. Soc. Lond., 1839, pt. vii, pp. 5-19.

—— 1839 B

Observations on the teeth of the *Zeuglodon*, *Basilosaurus* of Dr. Harlan.

Proc. Geol. Soc. Lond., iii, pp. 24-28.

Also in Lond. and Edinb. Philos. Mag., xiv, pp. 302-307; Ann. Nat. Hist., 1839, iii, pp. 210-213; Ann. Sci. Naturelles (2), xii, Zool. 1839, pp. 222-229.

—— 1839 C

Description of the *Lepidosiren annectens.*

Trans. Linn. Soc. Lond., xviii, pp. 327-361, with pls. xxiii-xxvii.

—— 1839 D

Observations on the fossils representing the *Thylacotherium prevostii* (Valenciennes), with reference to the doubts of its mammalian and marsupial nature, and on *Phascolotherium bucklandi.* Pt. I. On the *Thylacotherium.* Pt. II. On the *Phascolotherium.*

Trans. Geol. Soc. Lond. (2), vi, pp. 41-65, with pl. v.

—— 1840 A

Report on British fossil reptiles. Pt. I.

Report of Brit. Assoc. Adv. Sci., 9th meeting, Birmingham, 1839, pp. 43-126.

—— 1840 B

Description of a tooth and part of the skeleton of the *Glyptodon clavipes*, a large quadruped of the Edentate order, to which belongs the tessellated armour described and figured by Mr. Clift in the former volume of the Transactions of the Geological Society, with a consideration of the question whether the *Megatherium* possessed an analagous dermal armour.

Trans. Geol. Soc. Lond. (2), vi, pp. 81-106, with pls. x-xiii.

For preliminary description see Proc. Geol. Soc. Lond., iii, 1840, p. 108.

—— 1840 D

Note on the dislocation of the tail at a certain point observable in the skeletons of many *Ichthyosauri.*

Trans. Geol. Soc. Lond. (2), v, pp. 511-514, with pl. xlii.

—— 1840 E

A description of a specimen of the *Plesiosaurus macrocephalus*, Conybeare, in the collection of Viscount Cole, M. P., D. C. L., F. G. S., etc.

Trans. Geol. Soc. Lond. (2), v, pp. 515-535, with pls. xliii-xlv.

—— 1840 F

Fossil *Mammalia.*

The zoology of the voyage of H. M. S. Beagle. Part i, pp. 13-111, with pls. i-xxxii.

—— 1840 G

Description of the fossil remains of a mammal, a bird, and a serpent from the London clay.

Proc. Geol. Soc. Lond. iii, pp. 162-166.

The genera *Lithornis* and *Palæophis* are established.

—— 1841 A

A description of some of the soft parts, with the integument, of the hind-fin of the *Ichthyosaurus*, indicating the shape of the fin when recent.

Trans. Geol. Soc. Lond. (2), vi, pp. 199-201, with pl. xx.

Owen, Richard—Continued. 1841 B

Description of some ophidiolites (*Palæophis toliapicus*) from the London clay at Sheppey, indicative of an extinct species of serpent.

Trans. Geol. Soc. Lond. (2), vi, pp. 209-210, with pl. xxii.

—— 1841 C

Observations on the *Basilosaurus* of Dr. Harlan (*Zeuglodon cetoides* Owen).

Trans. Geol. Soc. Lond. (2), vi, pp. 69-79, with pls. vii-ix.

—— 1841 D

On the teeth of species of the genus *Labyrinthodon* (*Mastodonsaurus salamandroides* and *Phytosaurus* (?)) of Jaeger, from the German Keuper and the sandstone of Warwick and Leamington.

Ann. and Mag. Nat. Hist., viii, pp. 58-61.

Taken from Proc. Geol. Soc. Lond., iii, pp. 389-397.

—— 1841 E

A description of a portion of the skeleton of the *Cetiosaurus*, a gigantic extinct saurian, occurring in the Oolitic formation of different portions of England.

Proc. Geol. Soc. Lond., iii, pp. 457-462.

—— 1841 F

On the structure of fossil teeth from the central or Corn-stone division of the Old Red sandstone, indicative of a new genus of fishes, or fish-like *Batrachia*, for which is proposed the name of *Dendrodus*.

Micros. Journ. and Struct. Record, i, pp. 1-4; 17-20, with 7 figs. in the text.

—— 1842 A

Report on British fossil reptiles. Part II.

Report Brit. Assoc. Adv. Sci., 11th meeting, Plymouth, 1841, pp. 60-204.

—— 1842 B

On the teeth of a species of the genus *Labyrinthodon* (*Mastodonsaurus* of Jaeger), common to the German Keuper formation and the lower sandstone of Warwick and Leamington.

Trans. Geol. Soc. Lond. (2); vi, pp. 503-513.

—— 1842 C

Description of parts of the skeleton and teeth of five species of the genus *Labyrinthodon* . . . with remarks on the probable identity of *Cheirotherium* with this genus of extinct batrachians.

Trans. Geol. Soc. Lond., vi, pp. 515-543, with pls. xliii-xlvii.

—— 1842 D

Description of the skeleton of an extinct gigantic sloth, *Mylodon robustus*, Owen, with observations on the osteology, natural affinities, and probable habits of the megatheroid quadrupeds in general.

Pp. 1-176, with pls. i-xxiv. London, 1842, 4to.

—— 1842 E

Report on the *Missourium* now exhibiting at the Egyptian Hall, with an inquiry into the claims of *Tetracaulodon* to generic distinction.

Proc. Geol. Soc. Lond., iii, pp. 689-695.

—— 1843 A

Report on the British fossil *Mammalia*. Part I. *Unguiculata* and *Cetacea*.

Report Brit. Assoc. Adv. Sci., 12th meeting, Manchester, 1842, pp. 54-74.

—— 1843 B

On Dr. Harlan's notice of new fossil *Mammalia*.

Amer. Jour. Sci., xliv, pp. 341-345.

Letter from Professer Owen regarding *Orycterotherium*, *Mylodon*, and *Megatherium*.

—— 1844 A

Report on the British fossil *Mammalia*. Part II. *Ungulata*.

Report Brit. Assoc. Adv. Sci., 13th meeting, Cork, 1843, pp. 208-241.

—— 1845 A

Account of various portions of the *Glyptodon*, an extinct quadruped, allied to the armadillo, and recently obtained from the Tertiary deposits in the neighborhood of Buenos Ayres.

Quart. Jour. Geol. Soc., i, pp. 257-262.

—— 1845 B

Odontography; or a treatise on the comparative anatomy of the teeth, etc.

Vol. i, text, pp. i-lxxiv, 1-655; Vol. ii, atlas. pls. i, ii, 1-150. London, 1840-1845.

Due to repetitions of numbers on pls.; there are altogether 168.

For dates of publication see Woodward and Sherborn, 1890 A.

—— 1845 C

Reply to some observations of Prof. Wagner on the genus *Mylodon*.

Ann. and Mag. Nat. Hist. (1), xvi, pp. 100-102.

Owen, Richard—Continued. 1845 D

Description of certain fossil crania discovered by A. G. Bain, esq., in the sandstone rocks at the southeastern extremity of Africa, referable to different species of an extinct genus of *Reptilia* (*Dicynodon*), and indicative of a new tribe or suborder of *Sauria*.

Trans. Geol. Soc., London (2), vii, pp. 59-84, with pls. iii-vi.

—— 1846 A

Observations on certain fossils from the collection of the Academy of Natural Sciences of Philadelphia.

Proc. Acad. Nat. Sci. Phila., iii, pp. 93-96.

Reference to this paper is made in Amer. Jour. Sci., iii, 1847, p. 125.

—— 1846 B

A history of British fossil mammals and birds.

Pp. i-xlvi; 1-560. Illustrated by 237 woodcuts. London.

—— 1846 C

[Extracts from letters to Dr. S. G. Morton on *Dorudon* of Gibbes.]

Jour. Acad. Nat. Sci. Phila., i, pp. 9-10.

This forms a portion of Dr. Gibbes's paper on *Basilosaurus*, Gibbes, R. W., 1847 B.

—— 1846 D

On the fossil genus *Dorudon*.

Proc. Acad. Nat. Sci., Phila., iii, p. 15.

Abstract of letter stating that *Dorudon* of Gibbes is same as *Zeuglodon*.

—— 1847 A

General geological distribution and probable food and climate of the mammoth.

Amer. Jour. Sci. (2), iv., pp. 13-19.

Extracted from Owen's British Fossil Mammalia.

—— 1847 B

Report on the archetype and homologies of the vertebrate skeleton. Part I. Special homology. Part II. General homology.

Report Brit. Assoc. Adv. Sci., 16th meeting, Southampton, 1846, pp. 169-340, with 28 woodcuts and 3 tables.

—— 1847 C

Notices of some fossil *Mammalia* of South America.

Report Brit. Assoc. Adv. Sci., 16th meeting, Southampton, 1846, pp. 65-67.

—— 1847 D

Observations on certain fossil bones from the collection of the Academy of Natural Sciences of Philadelphia.

Jour. Acad. Nat. Sci. Phila. (2), i, pp. 18-20.

Collection made in digging canal near Brunswick, Ga.

Owen, Richard—Continued. 1847 E

Description of the atlas, axis, and subvertebral wedge-bones in the *Plesiosaurus*, with remarks on the homologies of those bones.

Ann. and Mag. Nat. Hist. (1), xx, pp. 217-225, with 6 figs. in the text.

—— 1848 A

Description of teeth and portions of jaws of two extinct anthracotheroid quadrupeds (*Hyopotamus vectianus* and *H. bovinus*) discovered by the Marchioness of Hastings in the Eocene deposits on the N. W. coast of the Isle of Wight, with an attempt to develop Cuvier's idea of the classification of pachyderms by the number of their toes.

Quart. Jour. Geol. Soc., iv, pp. 104-141, pls. vii-viii, with 13 figs. in text.

—— 1849 A

Notes on remains of fossil reptiles discovered by Prof. Henry Rogers, of Pennsylvania, U. S., in Green-sand formations of New Jersey.

Quart. Jour. Geol. Soc., v, pp. 380-383, with pls. x-xi.

—— 1849 B

Monograph on the fossil *Reptilia*. Part I. *Chelonia*.

Palæontographical Society, ii, pp. 1-76, 38 pls.

The above is a joint paper by Professors Owen and Bell.

—— 1849 C

On the development and homologies of the carapace and plastron of the chelonian reptiles.

Philos. Trans. Roy. Soc. Lond., pp. 151-170, with pl. 13, and 9 figs in the text.

—— 1850 A

Monograph of the fossil *Reptilia* of the London clay. Part II. *Crocodilia*, *Ophidia*.

Palæontographical Society, iii, pt. 2, pp. 1-68, pls. xxix; i-xvi.

—— 1850 B

On the communications between the cavity of the tympanum and the palate in the *Crocodilia* (gavials, alligators, and crocodiles).

Philos. Trans. Roy. Soc. Lond., 1850, pp. 521-527, with pls. xl-xlii.

—— 1851 A

On a new species of pterodactyle (*P. compressirostris*, Owen) from the Chalk, with some remarks on the

Owen, Richard—Continued.

nomenclature of the previously described species.

Proc. Zool. Soc. Lond., 1851, pt. xix, pp. 21-34, with pl. v.

—— 1851 B

Monograph on the fossil *Reptilia* of the Cretaceous formations.

Palæontographical Society, v, pp. 1-118, pls. i-xxxvii.

—— 1851 C

On the *Megatherium* (*M. americanum* Cuv. & Blum). Part I. Preliminary observations on the exogenous processes of vertebræ.

Philos. Trans. Roy. Soc. Lond., 1851, pp. 719-764; pls. xliv-liii.

—— 1852 A

Comparison of the modifications of the osseous structure of the *Megatherium* with that in other known existing and extinct species of the class *Mammalia*.

Amer. Jour. Sci. (2), xiv, pp. 91-97.

Abstract of a memoir read by Professor Owen to the Royal Society of London, cited from Jameson's Edinb. Jour., li, 350.

—— 1852 B

On the fossil *Mammalia* from the Eocene fresh-water formation at Hardwell, Hants.

Report Brit. Assoc. Adv. Sci., 21st meeting, Ipswich, 1851, p. 67.

—— 1853 A

On the anatomy of the walrus.

Proc. Zool. Soc. Lond., 1853, pt. xxi, pp. 103-106.

Among other things this paper treats of the dentition.

—— 1853 B

A monograph of the fossil chelonian reptiles of the Wealden clays and Purbeck limestones.

Palæontographical Society, vii, pp. 1-12, pls. i-ix.

—— 1853 C

Notes on the above-described fossil remains.

Quart. Jour. Geol. Soc., ix, pp. 66-67, with pls. ii, iii.

Discusses relationships of the bones discovered by Lyell and Dawson in Nova Scotia, and assigns to them the name *Dendrerpeton acadianum*.

Owen, Richard—Continued. 1853 D

Notice of a batrachoid fossil in British Coal shale.

Quart. Jour. Geol. Soc., ix, pp. 67-70, with pl. ii.

Describes and figures *Parabatrachus* (type *P. colei*), *Megalichthys*, and *Centrodus*.

—— 1854 A

On a fossil imbedded in a mass of Pictou coal from Nova Scotia.

Quart. Jour. Geol. Soc., x, pp. 207-208 with pl. ix.

—— 1854 B

Monograph on the fossil *Reptilia* of the Wealden formations. Part II. *Dinosauria*.

Palæontographical Society, viii, pp. 1-54, pls. i-xix.

—— 1854 C

On some fossil reptilian and mammalian remains from the Purbecks.

Quart. Jour. Geol. Soc., x, pp. 420-433, with 12 figs. in the text.

—— 1855 A

Additional remarks on the skull of the *Baphetes planiceps*, Ow.

Quart. Jour. Geol. Soc., xi, pp. 9-10.

—— 1855 B

On the *Megatherium* (*M. americanum* Cuv. & Blum). Part II. Vertebræ of the trunk.

Philos. Trans. Roy. Soc. Lond., cxlv., pp. 359-388, pls. xxii-xxvii.

—— 1855 C

On the fossil skull of a mammal (*Prorastomus sirenoides*, Owen) from the island of Jamaica.

Quart. Jour. Geol. Soc., xi, pp. 541-543, with pl. xv.

—— 1856 A

Monograph on the fossil *Reptilia* of the Wealden formations. Part III. *Megalosaurus bucklandi*.

Palæontograpnical Society, ix, pp. 1-26, pls. i-xii.

—— 1856 B

On the *Megatherium* (*M. americanum* Cuv. & Blum). Part III. The skull.

Philos. Trans. Roy. Soc. Lond., cxlvi, pp. 571-589, pls. xxi-xxvi.

—— 1856 C

Description of a fossil cranium of the musk-buffalo [*Bubalus moschatus* Owen; *Bos moschatus* (Zimm. & Gmel.) Pallas; *Bos pallasii*, Dekay; *Ovibos pallasii*, H.

Owen, Richard—Continued.

Smith & Bl.] from the "lower-level drift" at Maidenhead, Berkshire.

Quart. Jour. Geol. Soc., xii, pp. 124-131, with 6 figs. in the text.

—— 1856 D

Description of the skull of a large species of *Dicynodon* (*D. tigriceps*, Ow.), transmitted from South Africa by A. G. Bain, esq.

Trans. Geol. Soc. Lond. (2), vii, pp. 233-240, with pls. xxix-xxxii.

—— 1856 E

On parts of the trunk of the *Dicynodon tigriceps*.

Trans. Geol. Soc. Lond. (2), vii, pp. 241-247, with pls. xxxiii-xxxiv.

—— 1856 F

On the affinities of the large extinct bird (*Gastornis parisiensis*) indicated by a fossil femur and tibia discovered in the lowest Eocene formation near Paris.

Quart. Jour. Geol. Soc., xii, pp. 204-217, with pl. iii.

The structure of the tibia and femur in the various orders of birds and a number of genera is discussed.

—— 1857 A

On the ruminant quadrupeds and the aboriginal cattle of Great Britain.

Amer. Jour. Sci. (2), xxiii, pp. 132-136.

From Proc. Roy. Inst. Great Britain, May, 1856.

—— 1857 B

Monograph on the fossil *Reptilia* of the Wealden formation. Part IV.

Palæontographical Society, x, pp. 1-26, pls. i-xi.

Treats of *Iguanodon* and *Hylæosaurus*.

—— 1857 C

Description of a small Lophiodont mammal (*Pliolophus vulpiceps*, Owen) from the London clay, near Harwich.

Quart. Jour. Geol. Soc., xiv, pp. 54-71, with double pls. ii, iii, iv.

—— 1857 D

Description of the lower jaw and teeth of an Anoplotheroid quadruped (*Dichobune ovina*, Ow.) of the size of the *Xiphodon gracilis*, Cuv., from the Upper Eocene marl, Isle of Wright.

Quart. Jour. Geol. Soc., xiii, pp. 254-260, with pl. viii.

Owen, Richard—Continued. 1858 A

On the characters, principles of division, and primary groups of the class *Mammalia*.

Amer. Jour. Sci. (2), xxv, pp. 7-18; 177-198.

From Jour. of Proc. Linn. Soc., Lond., 1857.

—— 1858 B

Notes and additions [in Buckland's Geology and Mineralogy].

See Buckland, W., 1858 A.

—— 1858 C

On the *Megatherium* (*M. americanum*, Cuv. and Blum.) Part IV. Bones of the anterior extremities.

Philos. Trans. Roy. Soc. Lond., cxlviii, pp. 261-278, pls. xviii-xxii.

—— 1859 A

On a new genus (*Dimorphodon*) of pterodactyle, with remarks on the geological distribution of flying reptiles.

Report Brit. Assoc. Adv. Sci., 28th meeting, Leeds, 1858, pp. 97-98.

—— 1859 B

On remains of new and gigantic species of pterodactyle (*Pter. fittoni* and *Pter. sedgwickii*) from the upper Greensand near Cambridge.

Report Brit. Assoc. Adv. Sci., 28th meeting, Leeds, 1858, pp. 98-103.

—— 1859 C

On the gorilla (*Troglodytes gorilla*, Sav.).

Proc. Zool. Soc. London, 1859, pt. xxvii, pp. 1-23.

—— 1859 D

Monograph on the fossil *Reptilia*. Including supplement No. 1, Cretaceous *Pterosauria*, and No. 2, Wealden *Crocodilia*.

Palæontographical Society, xi, pp. 1-44, pls. i-xii.

—— 1860 A

On the orders of fossil *Reptilia* and their distribution in time.

Report Brit. Assoc. Adv. Sci., 29th meeting, Aberdeen, 1895, pp. 153-166.

—— 1860 B

Monograph of the fossil *Reptilia* of the Cretaceous and Purbeck strata, including supplement No. III, Cretaceous *Pterosauria* and *Sauropterygia*. Supplement No. II, *Iguanodon* and Purbeck *Lacertilia*.

Palæontographical Society, xii, pp. 1-39, pls. i-viii.

Owen, Richard—Continued. 1860 C

On the vertebral characters of the order *Pterosauria*, as exemplified in the genera *Pterodactylus* (Cuvier) and *Dimorphodon* (Owen).

Philos. Trans. Roy. Soc. Lond., cxlix, pp. 161-169, with 10 pls.

—— 1860 D

On the *Megatherium* (*M. americanum* Cuv. & Blum.). Part. V. Bones of the posterior extremities.

Philos. Trans. Roy. Soc. Lond., vol. cxlix, pp. 809-829, pls. xxxvii-xli.

—— 1860 E

Palæontology; or, a systematic summary of extinct animals and their geological remains.

Pp. i-xv, 1-420, with 141 figs., Edinburgh, 1860. A second edition was published in 1861.

—— 1860 F

On some reptilian fossils from South Africa.

Quart. Jour. Geol. Soc., xvi, pp. 49-63, with pls. i-iii.

—— 1862 A

Description of specimens of fossil *Reptilia* discovered in the Coal-measures of the South Joggins, Nova Scotia, by Dr. J. W. Dawson.

Quart. Jour. Geol. Soc., xviii, pp. 238-244, with pls. ix-x.

—— 1863 A

(I) On the Dicynodont *Reptilia*, with a description of some fossil remains brought by H. R. H. Prince Alfred from South Africa, November, 1860. (II) On the pelvis of *Dicynodon*. (III) Notice of a skull and parts of the skeleton of *Rhynchosaurus articeps*.

Philos. Trans. Roy. Soc. Lond., clii, pp. 455-467, with pls. xix-xxv.

—— 1864 A

On the skeleton of the gare-fowl (*Alca impennis*), and the probability of its being an extinct species.

Amer. Jour. Sci. (2), xxxviii, p. 431.

Taken from Proc. Zool. Soc. Lond., July 9, 1864.

—— 1864 B

Monograph of the fossil *Reptilia* of the Cretaceous formations; including supplement No. II, Cretaceous *Sauropterygia*. Supplement No. III, *Iguanodon*.

Palæontographical Society, xvi, pp. 1-21, pls. i-x.

Owen, Richard—Continued. 1864 C

On the *Archæopteryx* of Von Meyer, with a description of a long-tailed species from the lithographic stone of Solenhofen.

Philos. Trans. Roy. Soc. Lond., cliii, pp. 33-47, pls. i-iv.

—— 1865 A

Monograph of the fossil *Reptilia* of the Liassic formations. Part I. *Sauropterygia*.

Palæontographical Society, xvii, pp. 1-40, pls. i-xvi.

—— 1865 B

Observations on Recherches sur les Squalodons, par P. J. Van Beneden.

Geol. Magazine (1), ii, pp. 405-411.

A review of the above work of Van Beneden, which appeared in Memoirs Royal Acad. of Belgium, 1865.

—— 1866 A

On the anatomy of vertebrates. I. Fishes and reptiles.

Pp. i-xlii, 1-650, woodcuts 452. London, 1866, 8vo.

—— 1866 B

On the anatomy of vertebrates. II. Birds and mammals.

London, 1866, pp. i-viii, 1-592, with 406 figs. in the text and 3 tables. 8vo.

—— 1866 C

Description of the skeleton of the great auk, or garfowl (*Alca impennis* L.).

Trans. Zool. Soc. Lond., v, pp. 317-335, with pls. li and lii.

—— 1866 D

Description of part of the lower jaw and teeth of a small Oolitic mammal (*Stylodon pusillus* Ow.).

Geol. Magazine (1), iii, pp. 199-201, with pl. x, figs. 1, 2.

—— 1867 A

On the mandible and mandibular teeth of Cochliodonts.

Geol. Magazine (1), iv, pp. 59-63, with pls. iii and iv.

—— 1867 B

On the dental characters of genera and species, chiefly of fishes from the Lower Main seam and shales of coal, Northumberland.

Trans. Odontolog. Soc. Great Britain, v, pp. 323-376 with pls. i-xv.

Owen, Richard—Continued. 1868 A

On the anatomy of vertebrates. III. Mammals.

Pp. i-x, 1-915, text figs. 1-614, London, 1868. Vol. iii treats of the anatomy of the soft portions of the animal body and of the dentary and tegumentary systems. Chapter xi treats of the general conclusions reached.

—— 1869 A

On fossil teeth of equines from Central and South America.

Proc. Roy. Soc. Lond., xvii, pp. 267-268.

Equus conversidens described. *E. tau*, *E. curvidens*, and *E. arcidens* mentioned.

—— 1870 A

Monograph of the fossil *Reptilia* of the Liassic formations. Part II. *Pterosauria.*

Palæontographical Society, xxiii, pp. 41-81, pls. xvii-xx.

—— 1870 B

On fossil remains of equines from Central and South America referable to *Equus conversidens*, Ow., *Equus tau*, Ow., and *Equus arcidens*, Ow.

Philos. Trans. Roy. Soc. Lond., clix, 559-573, pls. lxi-lxii.

—— 1870 C

On remains of a large extinct lama (*Palauchenia magna* Ow.), from Quaternary deposits in the valley of Mexico.

Philos. Trans. Roy. Soc. Lond., clx, pp. 65-77, pls. iv-vii.

—— 1871 A

Monograph of the fossil *Mammalia* of the Mesozoic formations.

Palæontographical Society, xxiv, pp. 1-115, pls. i-iv.

—— 1872 A

Monograph of the fossil *Reptilia* of Wealden formation. Supplement No. IV. *Dinosauria* (*Iguanodon*).

Palæontographical Society, xxv, pp. 1-15, pls. i-iii.

—— 1873 A

Description of the skull of a dentigerous bird (*Odontopteryx toliapicus*, Ow.) from the London clay of Sheppey.

Quart. Jour. Geol. Soc., xxix, pp. 511-522, with pls. xvi-xvii.

—— 1874 A

Monograph on the fossil *Reptilia* of the Wealden and Purbeck formations. Supplement No. V. *Iguanadon.*

Palæontographical Society, xxvii, pp. 1-18, pls. i, ii.

Owen, Richard—Continued. 1874 B

Monograph on the fossil *Reptilia* of the Mesozoic formations. Part I. *Pterosauria* (*Pterodactylus*).

Palæontographical Society, xxvii, pp. 1-14, pls. i, ii.

—— 1875 A

On fossil evidences of a sirenian mammal (*Eotherium ægypticum*, Owen) from the Nummilitic Eocene of the Mokattam Cliffs, near Cairo.

Quart. Jour. Geol. Soc., xxxi, pp. 100-105, with pl. iii.

—— 1875 B

On *Prorastomus sirenoides* (Ow.). Part II.

Quart. Jour. Geol. Soc., xxxi, pp. 559-567, with pls. xxviii, xxix.

Reviewed in Geol. Magazine, (2) ii, pp. 422-423.

—— 1875 C

Monograph of the fossil *Reptilia* of the Mesozoic formations. Part II. (Genera *Bothriospondylus*, *Cetiosaurus*, *Omosaurus*.)

Palæontographical Society, xxix, pp. 15-93, pls. iii-xxii.

—— 1876 A

On the existence or not of horns in the *Dinocerata.*

Amer. Jour. Sci. (3), xi, pp. 401-403.

—— 1876 B

Evidences of Theriodonts in Permian deposits elsewhere than in South Africa.

Quart. Jour. Geol. Soc., xxxii, pp. 352-363, with 9 text figs.

Discusses *Bathygnathus borealis.*

—— 1876 C

Monograph on the fossil *Reptilia* of the Wealden and Purbeck formations. Supplement No. VII. *Crocodilia* (*Poikilopleuron*), *Dinosauria* (*Chondrosteosaurus*).

Palæontographical Society, xxx, pp. 1-7, pls. i-vi.

—— 1877 A

On the rank and affinities in the reptilian class of the *Mosasauridæ*, Gervais.

Quart. Jour. Geol. Soc., xxxiii, pp. 682-715, with 24 figs. in the text.

—— 1878 A

On the influence of the advent of a higher form of life in modifying the structure of an older and lower form.

Quart. Jour. Geol. Soc., xxxiv, pp. 421-430.

Owen, Richard—Continued. 1878 B

On the affinities of the *Mosasauridæ*, Gervais, as exemplified in the bony structure of the fore fin.

Quart. Jour. Geol. Soc., xxxiv, pp. 748-753, with 4 woodcuts in text.

—— 1878 C

Monograph on the fossil *Reptilia* of the Wealden and Purbeck formations. Supplement No. VII. *Crocodilia* (*Goniopholis*, *Petrosuchus*, and *Suchosaurus*).

Palæontographical Society, xxxii, pp. 1-15, pls. i-vi.

—— 1878 D

On the occurrence in North America of rare extinct vertebrates found fragmentarily in England.

Ann. and Mag. Nat. Hist. (5), ii, pp. 201-223, with pls. x, xi.

—— 1879 A

Monograph of the fossil *Reptilia* of the Wealden and Purbeck formations. Supplement, No. IX. *Crocodilia* (*Goniopholis*, *Brachydectes*, *Nannosuchus*, *Theriosuchus*, and *Nuthetes*).

Palæontographical Society, xxxiii, pp. 1-19, pls. i-iv.

—— 1879 B

On the occurrence in North America of rare extinct vertebrates found fragmentarily in England.

Ann. and Mag. Nat. Hist. (5), iv, pp. 53-61, with pl. viii.

A continuation of paper designated Owen R., 1878 D.

—— 1880 A

On the occurrence in North America of rare extinct vertebrates found fragmentarily in England.

Ann. and Mag. Nat. Hist. (5), v, pp. 177-181, with pl. viii.

Conclusion of papers designated as Owen, R., 1878 D and Owen R., 1879 B.

—— 1881 A

A monograph of the fossil *Reptilia* of the Liassic formations. Part III. *Ichthyopterygia*.

Palæontographical Society, xxxv, pp. 83-134, pls. xxi-xxxiii.

—— 1881 B

On the order *Theriodontia*, with a description of a new genus and species (*Ælurosaurus felinus* Ow.).

Quart. Jour. Geol. Soc., xxxvii, pp. 261-265, with pl. ix.

Owen, Richard—Continued. 1881 C

Description of parts of the skeleton of an Anomodont reptile (*Platypodosaurus robustus* Owen). Part II. The pelvis.

Quart. Jour. Geol. Soc., xxxvii, pp. 266-271, with pl. x.

Contains remarks by Seely and Twelvetrees.

—— 1883 A

On generic characters in the order *Sauropterygia*.

Quart. Jour. Geol. Soc., xxxix, pp. 133-138, with 3 woodcuts in the text.

—— 1883 B

On the skull of *Megalosaurus*.

Quart. Jour. Geol. Soc., xxxix, pp. 334-347, with pl. xi and 1 cut in the text.

—— 1884 A

On the skull and dentition of a Triassic mammal (*Tritylodon longævus*) from South Africa.

Quart. Jour. Geol. Soc., xl, pp. 146-152, with pl. vi.

—— 1886 A

American evidences of Eocene mammals of the "plastic-clay" period.

Report Brit. Assoc. Adv. Sci., 55th meeting, Aberdeen, 1885, p. 1033. Abstract.

—— 1886 B

On a new perissodactyle ungulate from Wyoming.

Geol. Magazine (3), iii, p. 140.

A reference to Woodward, H., 1886 B, concerning *Phenacodus*.

—— 1889 A

Monograph on the British fossil *Cetacea* of the Red Crag.

Palæontographical Society, pp. 1-40, with pls. i-v and 14 text figs.

This paper deals especially with the genus *Ziphius*, but a number of other genera are discussed, among them *Belemnoziphius*.

Packard, A. S. 1867 A

Observations on the glacial phenomena of Labrador and Maine, with a view of the recent invertebrate fauna of Labrador.

Mem. Boston Soc. Nat. Hist., i, pp. 210-303, with pls. vii, viii.

—— 1868 A

The hairy mammoth.

Amer. Naturalist, ii, pp. 23-35, with 4 woodcuts in the text.

—— 1886 A

Geological extinction and some of its apparent causes.

Amer. Naturalist, xx, pp. 29-40.

Palmer, T. S. 1895 A

The earliest name for Steller's sea cow and dugong.

Science (2), ii, pp. 449–450.

The earliest generic name of the sea cow is *Hydrodamalis* Retzius; the earliest specific name is *gigas* Zimm.

—— 1897 A

On the genera of rodents: An attempt to bring up to date the current arrangement of the order. By Oldfield Thomas, F. Z. S., Proc. Zool. Soc. London, 1896, pp. 1012–1028.

Science (2), vi, pp. 103–107.

A review of the paper whose title is quoted above.

—— 1899 A

[Review of Dr. E. L. Trouessart's *Catalogus Mammalium.*]

Science (2), x, pp. 491–495.

Contains corrections of various generic names of mammals.

Pander, Christ. H. 1856 A

Monographie der fossilen Fische des silurischen Systems der russisch-baltischen Gouvernements.

Pp. i–x, 1–91, with 9 pls. St. Petersburg, 1856.

—— 1857 A

Ueber die Placodermen des devonischen Systems.

Pp. 1–106, with pls. 1–8, and B. St. Petersburg, 1857. 4°.

—— 1858 A

Die Ctenodipterinen des devonischen Systems.

Pp. i–viii, 1–65, with pls. i–ix. 4°.

—— 1860 A

Ueber die Saurodipterinen, Dendrodipterinen, Glyptolepiden, und Cheirolepiden des devonischen Systems.

Pp. i–ix, 1–90, with 17 pls. St. Petersburg, 1860.

Pander, C. H., and **d'Alton**, Ed. 1818 A

Riesenfaulthier (*Megatherium*).

Isis von Oken, 1818, cols. 1063–1066.

A letter addressed to Isis from Madrid.

Panton, J. Hoyes. 1891 A

The mastodon and mammoth in Ontario, Canada.

Geol. Magazine (3), viii, pp. 504–505.

—— 1892 A

The mastodon and mammoth in Ontario, Canada.

Report Brit. Assoc. Adv. Sci., 61st meeting, Cardiff, 1891, pp. 654–655.

Paquier, V. 1894 A

Étude sur quelques cétacés du Miocène.

Mém. Soc. Géol. France. Paléontologie, iv, mém. No. 12, pp. 1–20, with pls. xvii–xviii.

Parker, H. W. 1884 A

[Abstract of an account of the finding of a mammoth in Grinnel, Iowa, by H. W. Parker; taken from *Daily Iowa Capital.*]

Science, iv, p. 46.

—— 1885 A

Footprints in the rocks of Colorado.

Science, v, pp. 312–313, with 2 woodcuts.

Parker, T. Jeffrey. 1887 A

Notes on *Carcharodon rondeletti.*

Proc. Zool. Soc. Lond., 1887, pp. 27–40, with pls. iv–viii.

—— 1890 A

On the presence of a sternum in *Notidanus indicus.*

Nature, xliii, p. 142, with 1 fig.

—— 1895 A

On the cranial osteology, classification, and phylogeny of the *Dinornithidæ.*

Trans. Zool. Soc. Lond., xiii, pp. 373–431, with pls. lvi–lxii.

Parker, W. K. 1864 A

On the sternal apparatus of birds and other *Vertebrata.*

Proc. Zool. Soc. Lond., 1864, pp. 339–341.

—— 1866 A

On the structure and development of the skull in the ostrich tribe.

Philos. Trans. Roy. Soc. Lond., clvi, pp. 113–183, with pls. vii–xv.

—— 1866 B

On the osteology of gallinaceous birds and tinamous.

Trans. Zool. Soc. Lond., v, pp. 149–241, with pls. xxxiv–xlii.

—— 1868 A

A monograph on the structure and development of the shoulder girdle and sternum in the *Vertebrata.*

Published by the Ray Society, pp. i–xii, 1–237, with pls. i–xxx.

—— 1870 A

On the structure and development of the skull of the common fowl.

Philos. Trans. Roy. Soc. Lond., clix, pp. 755–807; pls. lxxx–lxxxvii.

Parker, W. K.—Continued. 1871 A

On the structure and development of the skull of the common frog (*Rana temporaria*).

Philos. Trans. Roy. Soc. Lond., clxi, pp. 187-211, pls. iii-x.

—— 1872 A

On the structure and development of the crow's skull.

Monthly Micros. Jour. Lond., viii, pp. 217-226, with pls. xxxiv-xxxvi.

—— 1873 A

On the development of the skull in the tit and sparrow-hawk.

Monthly Micros. Jour. Lond., ix, pp. 6-11; 45-50, with pls. ii, v, vi.

—— 1874 A

On the structure and development of the skull in the salmon (*Salmo salar* L.)

Philos. Trans. Roy. Soc. Lond., clxiii, pp. 95-145; pls. i-viii.

—— 1874 B

On the structure and development of the skull in the pig (*Sus scrofa*).

Philos. Trans. Roy. Soc., clxiv, pp. 289-336, pls. xxviii-xxxvii.

An analysis of this memoir by E. Alix is found in Jour. de Zoologie, iv, 1875, pp. 62-69.

—— 1875 A

Birds.

Encyclop. Brit., ed. 9, iii, pp. 699-728, woodcuts 1-37.

The remainder of the article on birds is from the pen of Alfred Newton. Parker deals with the osteology in particular.

—— 1875 B

On ægithognathus birds. (Part I.)

Trans. Zool. Soc. Lond., ix, pp. 289-352, with pls. liv-lxii.

—— 1876 A

On the structure and development of the bird's skull.

Trans. Linn. Soc. Lond. (2), i, pp. 99-154, with pls. xx-xxvii.

—— 1877 A

On the structure and development of the skull in the *Batrachia*. Part. II.

Philos. Trans. Roy. Soc. Lond., clxvi, pp. 601-669, pls. liv-lxii.

—— 1878 A

On the structure and development of the skull in the sharks and skates.

Trans. Zool. Soc. Lond., x, pp. 189-234, with pls. xxxiv-xlii.

—— 1878 B

On the skull of the ægithognathous birds.

Trans. Zool. Soc. Lond., x, pp. 251-314, with pls. xlvi-liv.

Parker, W. K.—Continued. 1879 A

On the structure and development of the skull in the common snake (*Tropidonotus natrix*).

Philos. Trans. Roy. Soc. Lond., clxix, pp. 385-417, pls. xxvii-xxxiii.

—— 1879 B

On the evolution of the *Vertebrata*.

Nature, xx, pp. 30-32, 61-64, 81-83, with 4 figs. in the text.

—— 1880 A

On the structure and development of the skull in the *Lacertilia*.

Philos. Trans. Roy. Soc. Lond., clxx, pp. 595-640, pls. xxxvii-xlv.

See also Proc. Roy. Soc. Lond., 1879, p. 214.

—— 1881 A

On the structure and development of the skull in the *Batrachia*. Part III.

Philos. Trans. Roy. Soc. Lond., clxxii, pp. 1-266, pls. i-iv.

—— 1882 A

On the development of the skull in *Lepidosteus osseus*.

Philos. Trans. Roy. Soc. Lond., clxxiii, pp. 443-491, pls. xxx-xxxviii.

—— 1882 B

On the structure and development of the skull in sturgeons (*Acipenser ruthenus* and *A. sturio*.

Philos. Trans. Roy. Soc. Lond., clxxiii, pp. 139-185, pls. xii-xviii.

—— 1882 C

On the structure and development of the skull in the urodeles.

Trans. Zool. Soc. Lond., xi, pp. 171-214, with pls. xxxvi-xli.

—— 1882 D

On the morphology of the skull in the *Amphibia Urodela*.

Trans. Linn. Soc. Lond. (2), ii, pp. 165-212, with pls. xiv-xxi.

—— 1883 A

On the structure and development of the skull in the *Crocodilia*.

Trans. Zool. Soc. Lond., xi, pp. 263-310, with pls. lxii-lxxi.

—— 1884 A

On the presence of claws in the wings of birds.

The Ibis (5), vi, pp. 124-128, with 4 figs. in in the text.

—— 1885 A

On mammalian descent: The Hunterian lectures for 1884.

Pp. i-xii, 1-229, with addenda and illus.

Parker, W. K.—Continued. 1885 B

On the structure and development of the skull in the *Mammalia.* Part III. *Insectivora.*

Nature, xxxi, pp. 377-379.

—— 1886 A

On the structure and development of the skull in the *Mammalia.* Part II.

Philos. Trans. Roy. Soc., Lond., clxxvi, pp. 121-278, pls. xvi-xxxix.

—— 1887 A

On the morphology of birds.

Nature, xxxv, pp. 331-332.

—— 1889 A

On the structure and development of the wing of the common fowl.

Philos. Trans. Roy. Soc. Lond., clxxix, pp. 385-398, pls. lxii-lxv.

—— 1889 B

On the "manus" of *Phœnicopterus.*

The Ibis (6), i, pp. 183-185, with 2 figs. in the text.

—— 1891 A

On the morphology of a reptilian bird, *Opisthocomus cristatus.*

Trans. Zool. Soc. Lond., xiii, pp. 43-85, with pls. vii-x.

—— 1891 B

On the morphology of the *Gallinaceæ.*

Trans. Linn. Soc. Lond., (2), v, pp. 213-244, with pls. xxii-xxv.

Parsons, F. G. 1899 A

The joints of mammals compared with those of man.

Jour. Anat. and Physiol., xxxiv, pp. 41-68, with 14 text figs.

—— 1900 A

The joints of mammals compared with those of man. Part II. Joints of the hind limbs.

Jour. Anat. and Physiol., xxxiv, pp. 301-323, with 10 figs. in the text.

Patten, William. 1890 A

On the origin of vertebrates from arachnids.

Quart. Jour. Micros. Sci., xxxi, pp. 317-378, with pls. xxiii, xxiv, and 18 text figs.

Paulli, Simon. 1899 A

Ueber die Pneumaticität des Schädels bei den Säugethieren. I. Ueber den Bau des Siebbeins. Ueber die Morphologie des Siebbeins und die der Pneumaticität bei den Monotremen und den Marsupialiern.

Morpholog. Jahrbuch, xxviii, pp. 147-178, with pl. vii and 16 figs. in the text.

Paulli, Simon—Continued. 1900 A

Ueber die Pneumaticität des Schädels bei den Säugethieren. Eine Morphologische Studie. II. Ueber die Morphologie des Siebbeins und die der Pneumaticität bei den Ungulaten und Probosciden.

Morpholog. Jahrbuch, xxviii, pp. 179-251, with pls. viii-xiv, and 44 figs. in the text.

—— 1900 B

Ueber die Pneumaticität des Schädels bei den Säugethieren. Eine Morphologische Studie. III. Ueber die Morphologie des Siebbeins und die der Pneumaticität bei den Insectivoren, Hyracoideen, Chiropteren, Carnivoren, Pinnepedien, Edentaten, Rodentiern, Prosimiern, und Primaten, nebst einer zusamenfassenden Uebersicht über die Morphologie des Siebbeins und die der Pneumaticität des Schädels bei den Säugethieren.

Morpholog. Jahrbuch, xxviii, pp. 483-564, with pls. xxvii-xxix and 36 figs. in the text.

Pavlow, A. 1885 A

Notes sur l'histoire géologique des oiseaux.

Bull. Soc. Imp. Natur. Moscou, lx, pp. 100-123.

Pavlow, Marie. 1887 A

Études sur l'histoire paléontologique des ongulés en Amérique et en Europe. I. Groupe primitif de l'éocène inférieur.

Bull. Soc. Imp. Natur. Moscou (2), i, pp. 343-373, with pl. vii.

—— 1888 A

Études sur l'histoire paléontologique des ongulés. II. Le developpement des *Equidæ.* III. *Rhinoceridæ* et *Tapiridæ.*

Bull. Soc. Imp. Natur. Moscou (2), ii, pp. 135-182, with 2 pls.

For Professor Cope's review of this paper see Amer. Naturalist, xxii, p. 448; for that of M. Schlosser, Archiv f. Anthrop., xix, p. 159.

—— 1890 A

Études sur l'histoire paléontologique des ongulés. IV. *Hipparion* de la Russie. V. Chevaux pleistocènes de la Russie.

Bull. Soc. Imp. Natur. Moscou (2), iii, pp. 653-716, with pls. vii-ix.

—— 1892 A

Études sur l'histoire paléontologique des ongulés. VI. Les *Rhinoceridæ* de

Pavlow, Marie—Continued.

la Russie et le developpement des *Rhinoceridæ* en général.

Bull. Soc. Imp. Natur. Moscou (2), vi, pp. 137-221, with pls. iii-v.

Appended is a list of 105 papers consulted by the authoress.

Reviewed by M. Schlosser in Archiv f. Anthrop,, xxiii, pp. 138-139.

—— 1892 B

Qu'est-ce que c'est que l'*Hipparion?*

Bull. Soc. Imp. Natur. Moscou (2), v, pp. 410-414.

—— 1893 A

Note sur un nouveau crâne d'*Amynodon*.

Bull. Soc. Imp. Natur. Moscou (2), vii, pp. 37-42, with pl. iii.

—— 1894 A

Les mastodontes de la Russie et leurs rapports avec les mastodontes des autres pays.

Mém. Acad. Imp. Sci. St. Pétersbourg (8), i, No. 3, pp. 1-43, with pls. i-iii.

—— 1900 A

Études sur l'histoire paléontologique des ongulés. VII. Artiodactyles anciens.

Bull. Soc. Imp. Natur. Moscou, for 1899, pp. 268-328, with pls. v, vi.

Citations made from reprint with pp. 1-62.

Peale, Rembrandt. 1802 A

A short account of the mammoth.

Tilloch's Philos. Magazine, London, xiv, pp. 162-169.

—— 1802 B

On the differences which exist between the heads of the mammoth and elephant.

Tilloch's Philos. Magazine, London, xiv, pp. 228-229, with pl. v.

—— 1803 A

Account of some remains of a species of gigantic oxen found in America and other parts of the world.

Philos. Magazine, xv, pp. 325-327, with pl. vi.

Account of bones found at Bigbone-lick in Kentucky. The plate figures a portion of the skull and horn core of *Bison latifrons*.

—— 1803 B

An historical disquisition on the mammoth, or great American incognitum, an extinct, immense, carnivorous animal whose remains have been found in North America.

8vo, pp. i-vi, 1-91, with 1 pl. London, 1803.

Pearce, J. Chaning. 1846 A

Notice of what appears to be the embryo of an *Ichthyosaurus* in the pelvic cavity of *Icthyosaurus* (*communis?*).

Ann. and Mag. Nat. Hist. (1), xvii, pp. 44-46.

Pédroni, P. M. 1844 A

Mémoire sur les poissons fossiles du département de la Gironde.

Actes Soc. Linn. de Bordeaux, xiii, pp. 277-298, with pls. i, ii.

Most of the drawings illustrating this paper are rude.

Perkins, H. C. 1842 A

Notice of fossil bones from Oregon, in a letter to Dr. C. T. Jackson.

Amer. Jour. Sci., xlii, pp. 136-140, with 4 figs.

This paper does not identify with certainty the bones described. May be *Megatherium*. *Mylodon*, or *Megalonyx*, or even something else. J. A. Allen refers them with doubt to *Bison antiquus* (Allen, J. A., 1876 B, p. 21.) Leidy (1869 A, p. 397) refers some of them to the mammoth.

—— 1844 A

Note to the editors respecting fossil bones from Oregon.

Boston Jour. Nat. Hist., iv, pp. 134-136.

Gives description of a fossil humerus, which is named *Orycterotherium oregonensis*.

Perrin, A. 1895 A

Recherches sur les affinités zoologiques de l'*Hatteria punctata*.

Ann. Sci. Naturelles (7), Zool., xx, pp. 33-102.

The author deals principally with the muscular system, but devotes a few pages (39-46) to the skeleton.

—— 1896 A

Constitution du carpe des anoures.

Bull. Scient. France et Belgique, xxvii, pp. 419-431, pl. xvi.

Peters, Karl. 1869 A

Zur Kenntniss der Wirbelthiere aus den Miocänschichten von Eibiswald in Steiermark. I. Die Schildkrötenreste.

Denkschr. k. Akad. Wissensch. Wien, math.-naturwiss. Cl., xxix, pp. 111-124, pls. i-iii.

—— 1869 B

Zur Kenntniss der Wirbelthiere aus den Miocänschichten von Eibiswald in Steiermark. II. *Amphicyon*, *Viverra*, *Hyotherium*.

Denkschr. k. Akad. Wissensch. Wien, math.-naturwiss. Cl., xxix, pp. 189-214, with pls. i-iii.

—— 1870 A

Zur Kentniss der Wirbelthiere aus den Miocänschichten von Eibiswald in

Peters, Karl—Continued.

Steiermark. III. *Rhinoceros, Anchitherium.*

Denkschr. k. Akad. Wissensch. Wien, math.-naturw. Cl. xxx, pp. 29-49, with pls. i-iii.

—— 1895 A

Ueber die Bedeutung des Atlas der Amphibien.

Anatom. Anzeiger, x, pp. 565-574.

Contains titles of 26 papers on the subject.

Peters, Wilhelm. 1839 A

Zur Osteologie der *Hydromedusa maximiliani.*

Archiv Anat. and Physiol., Jahrg. 1839, pp. 280-295, with pl. xiv, figs. 1-4.

—— 1839 B

Ueber die Bildung des Schildkrötenskelet.

Archiv. Anat. and Physiol. u. Wissensch. Med., 1839, pp. 290-295, with pl. xiv, figs. 5-7.

—— 1852 A

Ueber die Gebissformel der Spitzmäuse.

Archiv f. Naturgesch., xviii, i, pp. 220-277.

—— 1864 A

Ueber das Milchgebiss des Walrosses, *Odobænus rosmarus.*

Monatsber. k. p. Akad. Wissensch. Berlin, 1864, pp. 685-687, with 1 pl.

Philippi, E. 1897 A

Ueber *Ischyodus suevicus* nov. sp. Ein Beitrag zur Kenntniss der fossilen Holocephalen.

Palæontographica, xliv, pp. 1-10, with pls. i, ii.

Contains description and figures of *Ischyodus suevicus.*

Pictet, F. J. 1853 A

Traité de paléontologie, ou histoire naturelle des animaux fossiles considérés dans leurs rapports zoologiques et géologiques.

Second edition, i, pp. i-xiv; 1-584, with atlas of 110 pls. 4°.

The first edition of the work was published in the year 1844.

—— 1854 A

Traité de paléontologie, etc.

Second edition, ii, pp. 1-297. Only the pages of this volume which treat of *Vertebrata* are included here. These are devoted to the fishes.

Pictet, F. J., and **Campiche,** G. 1858 A

Description des fossiles du terrain crétacé des environs de Sante-Croix.

Materiaux pour la paléontologie suisse, ser. ii, art. 2, pp. 1-380, with pls. i-xliii.

Of this work pp. 29-99, inclusive, with pls. i-xii, are devoted to the vertebrates.

Pictet, F. J., **Gaudin,** C., and **Harpe,** Ph. de la. 1857 A

Mémoire sur les animaux vertébrés trouvés dans le terrain sidérolitique du Canton de Vaud et appartenant a la faune éocène.

Genève, 1855-1857, pp. 1-120, with pls. i-xiv + 1.

Pictet, F. J., and **Humbert,** Alois. 1856 A

Monographie des chéloniens de la molasse suisse.

Materiaux pour la paléontologie suisse, ser. i, art. 3, pp. 1-71, with pls. i-xxii.

On pp. 64-66 is found a list of the tortoises of the Swiss molasse.

—— 1866 A

Nouvelles recherches sur les poissons fossiles du Mont Liban.

Genève, 1866, pp. i-vii; 1-115, with pls. i-xix.

Pictet, F. J., and **Jaccard,** Auguste. 1860 A

Description de quelques débris de reptiles et de poissons fossiles trouvés dans l'étage jurassique supérieur (virgalien) du Jura neuchâtelois.

Materiaux pour la paléontologie suisse, ser. iii, art. 1, pp. 1-88, with pls. i-xix.

Plieninger, Th. 1852 A

Belodon plieningeri, H. v. Meyer. Ein Saurier der Keuperformation.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, viii, pp. 389-524, with pls. viii-xiii.

Plieninger, Felix. 1895 A

Campylognathus zitteli. Ein neuer Flugsaurier aus dem Lias Schwabens.

Palæontographica, xli, pp. 193-222, with pls. xix and 8 figs. in the text.

This paper contains a very full bibliography of the pterodactyls.

Plummer, John T. 1843 A

Suburban geology, or rocks, soil, and water about Richmond, Wayne County, Ind.

Amer. Jour. Sci. (1), xliv, pp. 281-313, with 14 figs. in the text.

Refers (p. 301) to the finding of a large tusk at Brookville, Ind., and of a mastodon's tooth near Jacksonburg, Ind.

See, also, Amer. Jour. Sci., xl, 1841, p. 149.

Pohlig, Hans. 1887 A

Ueber amerikanische Elephantenmolaren.

Verhandl. Naturf. Ver. preuss. Rheinlande, xliv, Sitzungsber., pp. 117-118.

Recognizes two N. A. species, *E. primigenius* and *E. trogontherii.* The latter, the author says, may be identical with *E. columbi.*

Pohlig, Hans—Continued. 1887 B

Die Spitze eines sehr jugendlichen permanenten Stosszahnes von *Elephas primigenius*.

Verhandl. Naturf. Ver. preuss. Rheinlande, xliv, Sitzungsber., p. 254.

—— 1889 A

Dentition und Kranologie des *Elephas antiquus* Falc, mit Beiträgen über *Elephas primigenius* Blum. und *Elephas meridionalis* Nesti.

Nova Acta Akad. Cæs. Leop.-Car., liii, pp. 1-259, with pls. i-x and 110 figs. in the text.

Reviewed by M. Schlosser in Archiv f. Anthrop., xix, pp., 127-129.

—— 1892 A

Die Cerviden des thüringischen Diluvial-Travertines, mit Beiträgen über andere diluviale und über recente Hirschformen.

Palæontographica, xxxix, pp. 215-264, with pls. xxiv-xxvii.

—— 1892 B

Dentition und Kranologie des *Elephas antiquus* Falc, mit Beiträgen über *Elephas primigenius* Blum. und *Elephas meridionalis* Nesti. Zweiter Abschnitt.

Nova Acta Acad. Cæs. Leop.-Car., lvii, pp. 267-466, with pls. A-E and text figs. 108-152.

Review by M. Schlosser in Archiv f. Anthrop., xxii, pp. 96-97.

—— 1893 A

Le premier crane complet du *Rhinoceros* (*Cænopus*) *occidentalis*, Leidy.

Bull. Soc. Belge Géol., Paléont., Hydrol., vii, Mém., pp. 41-44, with pl. iii.

Pollard, E. C. 1893 A

The succession of teeth in mammals.

Natural Science, ii, pp. 360-363.

Pollard, H. B. 1892 A

On the anatomy and phylogenetic position of *Polypterus*.

Zool. Jahrbücher, v, pp. 387-428, with pls. xxvii-xxx and 10 figs. in the text.

—— 1894 A

The cirrhostomial origin of the head in vertebrates.

Anatom. Anzeiger, ix, pp. 349-359, with 4 figs. in the text.

Discusses the derivation of the Siluroids from *Amphioxus*, *Myxine*, etc.

—— 1894 B

The suspension of the jaws in fish.

Anatom. Anzeiger, x, pp. 17-25, with 5 figs.

Pollard, H. B.—Continued. 1895 A

The oral cirri of Siluroids and the origin of the head in vertebrates.

Zool. Jahrbücher; Abth. f. Anat., viii, pp. 379-424, pls. xxiv, xxv.

Pomel, A. 1847 A

Note critique sur les caractères et les limites du genre *Palæotherium*.

Arch. Sci. Phys. et Nat., Geneva, v, pp. 200-207.

—— 1847 B

Sur un nouveau genre de pachydermes fossiles (*Elotherium*) voisin des Hippopotames.

Arch. Sci. Phys. et Nat. Geneva, v, pp. 307-308.

—— 1847 C

Note sur des animaux fossiles découverts dans le départmente de l'Allier.

Bull. Soc. Géol. France (2), iv, pp. 378-385, with pl. iv.

—— 1848 A

Observations paléontologiques sur les hippopotames et les cochons.

Arch. Sci. Phys. et Nat., Geneva, viii, pp. 155-162.

Treats of the species of *Hippopotamus* and of *Sus* then known.

—— 1848 B

Note sur le genre *Hyopotamus* Owen et sur les Anchithériums en général.

Arch. Sci. Phys. et Nat., Geneva, viii, pp. 321-326.

—— 1848 C

Études sur les carnassiers insectivores. I. Insectivores fossiles. II. Classification des insectivores.

Arch. Sci. Phys. et Nat., Genève, ix, pp. 159-165; 244-251.

—— 1848 D

Description de la tête du *Castoroides ohioensis* Foster.

Arch. Sci. Phys. et Nat., Geneva, ix, pp. 165-167.

A review of Wyman, J., 1846 B.

—— 1853 A

Catalogue méthodique et descriptif des vertébrés fossiles découverts dans le bassin hydrographique supérieur de la Loire, et surtout dans la vallée de son affluent principal, l'Allier.

8 vo. Paris, 1853, pp. 1-193.

Portis, Alessandro. 1878 A

Ueber fossile Schildkröten aus dem Kimmeridge von Hannover.

Palæontographica, xxv, pp. 125-140, with pls. xv-xviii.

Portis, Alessandro—Continued. 1882 A

Les chéloniens de la Mollasse Vaudoise conservés dans le Musée Géologique de Lausanne.

Abhandl. schweizer. paläontolog. Gesellsch., ix, pp. 1-78, pls. i-xxix.

Contains 59 titles of papers consulted.

Pouchet, Georges. 1866 A

Contribution à l'anatomie des Édentés.

Jour. l'Anat. et Physiol., iii, pp. 113-129, 337-353, with pls. iii, iv, ix, x.

See vol. iv, pp. 35-37, for a letter from Richard Owen to Pouchet on the above memoir.

Pouchet, G., and **Beauregard**, H. 1889 A

Recherches sur le cachalot.

Nouv. Arch. du Mus. d'Hist. Nat., Paris (3), i, pp. 1-96, with pls. i-viii.

This portion of the authors' researches is devoted to the osteology of *Physeter macrocephalus*.

Powrie, James. 1861 A

Cephalaspides of Forfarshire.

The Geologist, iv, pp. 137-180, with woodcut.

—— 1864 A

The Scottish *Pteraspis*.

The Geologist, vii, pp. 170-172.

—— 1864 B

On the fossiliferous rocks of Forfarshire and their contents.

Quart. Jour. Geol. Soc., xx, pp. 413-429, with pl. xx.

Contains remarks on *Acanthodidæ* and *Cephalaspidæ*. New genus *Euthacanthus* (=*Climatius*) is established.

—— 1867 A

On the genus *Cheirolepis*, from the Old Red sandstone.

Geol. Magazine (1), iv, pp. 147-152, with 2 figs. in the text.

Powrie, James, and **Lankester**, E. Ray. 1868 A

A monograph of the fishes of the Old Red sandstone of Britain. Part I. The *Cephalaspidæ*, by E. R. Lankester.

Palæontographical Society, xxi, pp. 1-33, pl. i-v, text figs. 1-12.

—— —— 1870 A

A monograph of the fishes of the Old Red sandstone of Britain. Part I (concluded). The *Cephalaspidæ*.

Palæontographical Society, xxiii, pp. 1-62, pls. vi-xiv, text figs. 12-33.

Preble, Edward A. 1899 A

Revision of the jumping mice of the genus *Zapus*.

N. A. Fauna, No. 15 (U. S. Dept. Agricult.), pp. 1-42, with pl. i.

Preyer, William. 1862 A

Ueber *Plautus impennis* Brünn.

Jour. für Ornithologie, x, pp. 110-124, 337-356.

Priem, F. 1896 A

Sur des dents de poissons du Crétacé supérieur de France.

Bull. Soc. Géol. France (3), xxiv, pp. 288-295, with pl. ix.

—— 1897 A

Sur des dents d'Elasmobranches de divers gisements sénoniens (Villedieu, Meudon, Folx-les-caves).

Bull. Soc. Géol. France (3), xxv, pp. 40-56, with pl. i.

—— 1898 A

Sur des pycnodontes et des squales du Crétacé supérieur du bassin de Paris (Turonien, Sénonien, Montien inférieur).

Bull. Soc. Géol. France (3), xxvi, pp. 229-243, with pl. ii.

Describes new species *Cœlodus attenuatus*, and gives figs. of *Corax pristodontus* and *Scapanorhynchus?* (*Odontaspis*) *subulatus*.

Prime, A. J. 1845 A

Great American mastodon.

Amer. Quart. Jour. Agricult. and Sci., ii, pp. 203-212, with pl. iv.

Probst, J. 1858 A

Ueber das Gebiss des *Notidanus primigenius* Ag.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, xiv, pp. 124-127, with 10 figs. in the text.

—— 1859 A

Ueber die Streifung der fossilen Squalidenzähne.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, xv, pp. 100-102.

—— 1878 A

Berträge zur Kenntniss der fossilen Fische aus der Molasse von Baltringen.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, xxxiv, pp. 112-154, with pl. i.

—— 1879 A

Berträge zur Kenntniss der fossilen Fische aus der Molasse von Baltringen.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, xxxv, pp. 127-191, with pls. ii, iii.

This paper is devoted to descriptions of the teeth of sharks.

—— 1885 A

Ueber fossile Reste von *Squalodon*. Beitrag zur Kenntniss der fossilen Reste der Meeressäugetiere aus der Molasse von Baltringen.

Jahreshefte Ver. vaterl. f. Naturk. Württemberg, xli, pp. 49-67, with pl. i.

Probst, J.—Continued. 1886 A

Ueber die fossilen Reste von Zahnwalen (Cetodonten) aus der Molasse von Baltringen.

Jahreshefte Ver. väterl. f. Naturk. Württemberg, xlii, pp. 102–145, with pl. iii.

Prout, H. A. 1846 A

Gigantic *Palæotherium*.

Amer. Jour. Sci. (2), ii, pp. 288–289, with 1 fig. in the text.

—— 1847 A

Description of a fossil maxillary bone of a *Palæotherium* from near White River.

Amer. Jour. Sci. (2), iii, pp. 248–250, with 2 figs. in the text.

—— 1860 A

[Remarks of Dr. Prout on a fossil tooth found at King's salt works, near Abingdon, Va.]

Trans. Acad. Sci. St. Louis, i, pp. 699–700.

On this tooth the genus *Leidyotherium* was proposed without any specific name. It appears to be quite probable that there was an error regarding the locality.

Putnam, F. W. 1884 A

Man and the mastodon.

Science, iv, p. 112.

Refers to Plummer, J. T., 1843 A.

—— 1885 A

Man and the mastodon.

Science, vi, pp. 375–376.

Pycraft, W. P. 1894 A

The wing of *Archæopteryx*. Part I.

Natural Science, v, pp. 350–360, with pls. i–iii.

—— 1896 A

The wing of *Archæopteryx*.

Natural Science, viii, pp. 261–266, with 3 figs. in the text.

—— 1898 A

Contributions to the osteology of birds. Part I. *Steganopodes*.

Proc. Zool. Soc. Lond., 1898, pp. 82–101, with pls. vii, viii, and 8 figs. in the text.

—— 1899 A

Contributions to the osteology of birds. Part III. *Tubinares*.

Proc. Zool. Soc. Lond., 1899, pp. 381–411, with pls. xxii, xxiii, and 2 text figs.

Quart. Jour. Geol. Sci. 1845 A

Notice of a mastodon recently discovered in North America.

Quart. Jour. Geol. Soc., i, pp. 566–567.

An extract "from an American paper," referring to the Newburgh, N. Y., mastodon.

Quenstedt, Fr. Aug. 1847 A

Ueber *Lepidotus* im Lias E. Württembergs.

Pp. 1–24, with pls. i, ii. Tübingen, 1847.

Description of *Lepidotus elvensis*, Blv.

—— 1850 A

Ueber *Hippotherium* der Bohnenerze.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, vi, pp. 164–185, with pl. i.

This volume, it is stated on the title-page, was not issued until 1854.

—— 1850 B

Die Mastodonsaurier im grünen Keupersandsteine Württemberg's sind Batrachier.

Pp. 1–34, with pls. i–iv, Tübingen, 1850.

—— 1852 A

Handbuch der Petrefactenkunde.

Pp. 1–792, with 62 pls. Tübingen, 1852.

Pp. 1–258, with pls. 1–19, are devoted to the *Vertebrata*. A second edition of this work was published in 1866. A third edition of 1,239 pages and 100 pls. appeared in 1885.

—— 1858 A

Ueber *Pterodactylus liasicus*.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, xiv, pp. 299–310, with pl. ii, fig. 1.

—— 1885 A

Handbuch der Petrefactenkunde. Dritte umgearbeitete und vermehrte Auflage.

Tübingen, 1885, pp. i–viii, 1–1239, with an atlas of 100 pls. and explanations and 443 figs. in the text.

Of this work pp. 19–392 are devoted to the *Vertebrata*.

—— 1889 A

Psammochelys keuperina.

Jahreshefte Ver. f. vaterl. Naturk. Württemberg, xlv, pp. 120–130, with pls. i, ii.

Rapp, Wilhelm. 1852 A

Anatomische Untersuchungen über die Edentaten. Mit 10 Steindrucktafeln. 2te Auflage.

Pp. 1–108. Tübingen, 1852.

Treats of the anatomy, including the osteology, of the living *Edentata*.

Rathke, Heinrich. 1853 A

Ueber den Bau und die Entwicklung des Brustbeins der Saurier.

Pp. 1–26, Königsberg, 1853.

A translation of this work will be found in Parker, W. K., 1868 A.

Redfield, John Howard. 1837 A

Fossil fishes of Connecticut and Massachusetts, with a notice of an undescribed genus.

Annals Lyc. Nat. Hist. N. Y., iv, pp. 35–40.

Redfield, W. C. 1838 A

Newly discovered ichnolites.

Amer. Jour. Sci., xxxiii, pp. 201-202.

—— 1838 B

Fossil fishes in Virginia.

Amer. Jour. Sci., xxxiv, p. 201.

—— 1839 A

Fossil fishes of the Red sandstone.

Amer. Jour. Sci., xxxvi, pp. 186-187.

Mentions only *Catopterus gracilis* and *Palæoniscus*, species not determined.

—— 1841 A

Short notices of American fossil fishes.

Amer. Jour. Sci. (1), xli, pp. 24-28.

—— 1843 A

Notice of newly discovered fish beds and a fossil footmark in the Red sandstone formation of New Jersey.

Amer. Jour. Sci. (1), xliv, pp. 134-136, with 1 fig. in text.

—— 1850 A

On some fossil remains from Broome County, N. Y.

Proc. Amer. Assoc. Adv. Sci., 2d meeting, Cambridge, Mass., pp. 255-256.

Vulpes obtained from clay beneath drift.

—— 1853 A

On the geological age and affinities of the fossil fishes which belong to the sandstone formation of Connecticut, New Jersey, and the coal field near Richmond, in Virginia.

Annals of Science (Cleveland, Ohio), i, pp. 270-271.

Abstract of communication made to the Amer. Assoc. Adv. Sci.

—— 1856 A

On the relations of the fossil fishes of the sandstone of the Connecticut and other Atlantic States to the Liassic and Oolitic periods.

Amer. Jour. Sci. (2), xxii, pp. 357-363.

—— 1857 A

On the relations of the fossil fishes of the sandstone of Connecticut and other Atlantic States to the Liassic and Jurassic periods.

Proc. Amer. Assoc. Adv. Sci., 10th meeting, Albany, 1856, pp. 180-188.

Reh, L. 1894 A

Die Gliedmassen der Robben.

Jenaische Zeitschr. Naturwiss., xxviii (xxi), pp. 1-44, with pl. i.

Appended is a list of papers, 36 in number, which bear on the subject discussed.

Reh, L.—Continued. 1895 A

Die Schuppen der Säugetiere.

Jenaische Zeitschr. Naturwiss., xxix (xxii), pp. 157-220, with pl. i.

Appended is a list of papers bearing on the subject, 90 in number.

Reichenow, Anton. 1871 A

Die Fussbildungen der Vögel.

Jour. für Ornithologie, xix, pp. 401-458, with pl. vi.

Reichert, C. B. 1865 A

Ueber ein Schädel-fragment des *Glyptodon.*

Archiv Anat. Physiol. u. wissensch. Med., 1865, p. 336.

Reinhardt, J. 1866 A

Ueber den Hautpanzer der megatheroiden Thiere.

Archiv Anat. Physiol. u. wissensch. Med., 1866, pp. 414-415.

—— 1874 A

Sur les anomalies des vertèbres sacrées chez les crocodiliens.

Jour. de Zoologie, iii, pp. 308-312.

—— 1875 A

De i Brasiliens Knoglehuler fundne Glyplodont-Levninger og en ny, til de gravigrade Edentater hörende Slægt.

Vidensk. Meddel. naturh. Forening Kjöbenhavn, 1875, pp. 165-236, with pl. iv.

—— 1879 A

Beskrivelse af Hovedskallen af et Kæmpedovendyr, *Grypotherium darwinii*, fra La Plata-Landenes plejstocene Dannelser.

Danske Vidensk. Selskab. Skr. (5), xii, pp. 353-374, with pls. i, ii, and résuméme in French, pp. 375-379.

—— 1880 A

De i brasilianske Knoglehuler fundne Navlesvin-Arter.

Vidensk. Meddel. naturh. Forening, Kjöbenhavn, 1880, pp. 3-33, with pl. vii.

Describes as new *Dicotyles stenocephalus* and compares it with North American species.

Reis, Otto M. 1888 A

Die Cœlacanthinen, mit besonderer Berücksichtigung der im Weissen Jura Bayerns vorkommenden Gattungen.

Palæontographica, xxxv, pp. 1-96, with pls. i-v.

—— 1892 A

Ueber die Zurechnung der Acanthodier zu den Selachiern.

Sitzungsber. Gesellsch. naturf. Freunde Berlin, 1892, pp. 153-156.

Followed by remarks in reply by Dr. Otto Jaekel.

Reis, Otto M.—Continued. 1895 A

On the structure of the frontal spine and the rostro-labial cartilages of *Squaloraja* and *Chimæra*.

Geol. Magazine (4), ii, pp. 385–391, pl. xii.

—— 1895 B

Illustrationen zur Kenntniss des Skelets von *Acanthodes bronni* Agassiz.

Abhandl. senckenb. naturforsch. Gesellsch., xix, pp. 49–64, with pls. i–vi.

—— 1895 C

Palæontologische Beiträge zur Stammesgeschichte der Teleostier.

Neues Jahrb. Mineral., 1895, i, Abhandl., pp. 162–182.

—— 1896 A

Ueber *Acanthodes bronni* Agassiz.

Schwalbe's Morpholog. Arbeiten, vi, pp. 143–220, pls. vi, vii, and 2 figs. in the text.

For review of this paper see A. Tornquist, in Zoolog. Centralbl., i, pp. 649–656.

—— 1897 A

Das Skelet der Pleuracanthiden und ihre systematischen Beziehungen.

Abhandl. senckenb. naturforsch. Gesellsch., xx, pp. 57–155, with pl. i.

Reviewed by Tornquist, Zoolog. Centralbl., v, 1898, pp. 472–474.

Reissner, E. 1859 A

Ueber die Schuppen von *Polypterus* und *Lepidosteus*.

Archiv. Anat. Physiol. u. wissensch. Med., 1859, pp. 259–268, with pl. v, A.

Renevier, E. 1879 A

Les *Anthracotherium* de Rochette.

Bull. Soc. Vaudoise, Sci. Nat. (2), xvi, pp. 140–148, with pls. iv–viii.

Reuss, August Em. 1846 A

Die Versteinerungen der böhmischen Kreideformation. Abth. I.

Pp. i–iv, 1–58, with i–xiii, Stuttgart. 4to.

Of this "Abtheilung" only pp. 1–13 are devoted to the *Vertebrata*, and these are all fishes.

Rhoads, Samuel N. 1894 A

A contribution to the life history of the Allegheny cave rat, *Neotoma magister*.

Proc. Acad. Nat. Sci. Phila., 1894, pp. 213–221.

—— 1895 A

Distribution of the American bison in Pennsylvania, with remarks on a new fossil species.

Proc. Acad. Nat. Sci. Phila., 1895, pp. 244–248.

Describes new species, *B. appalachicolus*.

Rhoads, Samuel N.—Cont'd. 1897 A

Notes on living and extinct species of North American *Bovidæ*.

Proc. Acad. Nat. Sci. Phila., 1897, pp. 483–502, with pls. xii.

—— 1898 A

Notes on the fossil walrus of North America.

Proc. Acad. Nat. Sci. Phila., 1898, pp. 196–201.

Rice, Franklin P. 1885 A

An account of the discovery of a mastodon's remains in Northborough, Worcester County, Mass.

Worcester, Mass., 1885. Pp. 3–8, with 1 pl.

Richardson, John. 1854 A

The zoology of the voyage of H. M. S. *Herald*. Vertebrates, including fossil mammals.

Pp. 172; pls. i–xxxiii. London, 1854.

—— 1854 B

Extract from the "Zoology of the *Herald*" on the mastodon found in the Swan River region.

Proc. Boston Soc. Nat. Hist., v, pp. 82–84.

—— 1855 A

Note on the *Mastodon* (?) and the *Elephas primigenius*.

Amer. Jour. Sci. (2), xix, pp. 131–132.

Ridewood, W. G. 1895 A

The teeth of the horse.

Natural Science, vi, pp. 249–258, with figs.

Describes and illustrates the dentition of the horse from six months before birth to old age.

Riese, Heinrich. 1892 A

Beitrag zur Anatomie des *Tylotriton verrucosus*.

Zool. Jahrbücher Abth. Anat. und Ontog., pp. 99–154, with pl. 9–11.

Riggs, Elmer S. 1896 A

Hoplophoneus occidentalis.

Kansas Univ. Quarterly, v, pp. 37–52, with pl. i.

—— 1896 B

A new species of *Dinictis* from the White River Miocene of Wyoming.

Kansas Univ. Quarterly, iv, pp. 237–241, with 1 fig. in the text. Describes *D. paucidens*, sp. nov.

—— 1898 A

On the skull of *Amphictis*.

Amer. Jour. Sci. (4), v, pp. 257–259, with 2 figs. in the text.

—— 1899 A

The *Mylagaulidæ*: an extinct family of sciuromorph rodents.

Pubs. Field Columb. Mus., Geol., i, pp. 182–187, with text figs.

Riggs, Elmer S.—Continued. 1900 A

Fossil hunting in Wyoming.

Science (2), xi, pp. 233–234.

Mentions Prof. F. A. Lucas's identification of *Labrosaurus* with *Antrodemus*.

Riley, Henry, and **Stutchbury**, Samuel. 1838 A

A description of various fossil remains of three distinct saurian animals recently discovered in the Magnesian Conglomerate near Bristol.

Trans. Geol. Soc. Lond. (2), v, pp. 349–357, with pls. xxix, xxx.

A brief abstract is given in Neues Jahrb. Mineral., 1841, pp. 607–609.

Ringueberg, Eug. N. S. 1884 A

A new *Dinichthys* from the Portage Group of western New York.

Amer. Jour. Sci. (3), xxvii, pp. 476–478, with 2 figs. in the text.

Describes *D. minor*, not *D. minor* of Newberry; later called *D. ringuebergi* by Newberry.

Roberts, G. E. 1864 A

On some remains of *Bothriolepis*.

Report Brit. Assoc. Adv. Sci., 33d meeting, Newcastle-on-Tyne, 1863, p. 87.

Rochebrune, A. J. 1880 A

Revision des ophidiens fossiles du Muséum d'Histoire Naturelle.

Nouv. Arch. du Mus. d'Hist. Nat., Paris (2), iii, pp. 271–296.

—— 1881 A

Mémoire sur les vertèbres des ophidiens.

Jour. l'Anat. et Physiol., xvii, pp. 185–229, with pls. xiv, xv, and 18 figs. in the text.

Roemer, Ferdinand. 1849 A

Texas: Mit besonderer Rücksicht auf deutsche Auswanderung und die physischen Verhältnisse des Landes. Mit einem naturwissenschaftlichen Anhange und einer topographisch-geognostischen Karte von Texas.

Pp. i–xv, 1–464, Bonn, 1849.

On pp. 419–420 are found descriptions of *Lamna texana*, and the genus *Ancistrodon* Debey. *Otodus appendiculatus*, *Oxyrhina mantelli* and *Corax heterodon* are mentioned.

—— 1852 A

Die Kreidebildungen von Texas und ihre organischen Einschlüsse. Mit einem die Beschreibung von Versteinerungen aus paläozoischen und tertiären Schichten enthaltenden Anhange und mit 11 von C. Hohe nach der Natur auf Stein gezeichneten Tafeln.

Pp. i–vii, 1–100, Bonn, 1852.

Roemer, Ferdinand—Cont'd. 1856 A

Palæoteuthis, eine Gattung nackter Cephalopoden in devonischen Schichten der Eifel.

Palæontographica, iv, pp. 72–74, with pl. xiii.

Describes *Palæoteuthis dunensis*.

—— 1857 A

Ueber Fisch-und Pflanzen-führende Mergelschiefer des Rothliegenden bei Klein-Weundorf unweit Löwenberg, und im Besonderen über *Acanthodes gracilis*, den am häufigsten in denselben vorkommenden Fisch.

Zeitschr. deutsch. geol. Gesellsch., ix, pp. 51–84, with pl. iii.

—— 1865 A

Ueber das Vorkommen von *Rhizodus hibberti* Owen (*Megalichthys hibberti* Agassiz et Hibbert) in den Schieferthonen des Steinkohlengebirges von Volpersdorf in der Grafschaft Glatz.

Zeitschr. deutsch. geol. Gesellsch., xvii, pp. 272–276, with pl. vi.

The species here called *Rhizodus hibberti* is renamed *Rhizodopsis robusta* by A. S. Woodward.

—— 1890 A

Zur Frage nach dem Ursprunge der Schuppen der Säugetiere.

Anatom. Anzeiger, viii, pp. 526–532.

—— 1892 A

Ueber den Bau und die Entwicklung des Panzers der Gürteltiere.

Jenaische Zeitschr. Naturwiss., xxvii (xx), pp. 513–556, with pls. xxiv and xxv.

Röse, C. 1892 A

Zur Phylogenie des Säugetiergebisses.

Biolog. Centralbl., xii, pp. 624–638.

Abstract by M. Schlosser in Archiv f. Anthrop., xxiii, p. 153.

—— 1892 B

Ueber Zahnbau und Zahnwechsel der Dipnoer.

Anatom. Anzeiger, vii, pp. 821–839, with 10 figs. in the text.

—— 1892 C

Ueber die Zahnentwicklung der Krokodile.

Verhandl. Anat. Gesellsch., 6th meeting, Vienna, 1892, pp. 225–226.

—— 1892 D

Beiträge zur Zahnentwicklung der Edentaten.

Anatom. Anzeiger, vii, pp. 495–512, with 14 text figs.

Röse, C.—Continued. 1892 E

Ueber die Zahnentwicklung der Beuteltiere.

Anatom. Anzeiger, vii, pp. 639–650; 693–707, with 23 text figs.

—— 1893 A

Ueber den Zahnbau und Zahnwechsel von *Elephas indicus*.

Schwalbe's Morpholog. Arbeiten, iii, pp. 173–194, pl. x and 2 text figs.

Abstract of, by M. Schlosser, in Archiv f. Anthrop., xxiv, pp. 137–138.

Contains citations of the literature of the subject.

—— 1893 B

Ueber die Zahnentwicklung der *Crocodilia*.

Schwalbe's Morpholog. Arbeiten, iii, pp. 195–228, with 45 figs. in the text.

—— 1893 C

Ueber die Deutung des Milchgebisses der Säugethiere.

Verhandl. deutsch. odontolog. Gesellsch., iv, pp. 308–310, with 1 text fig.

Preceded by a paper on same subject by Dr. M. Schlosser.

—— 1894 A

Ueber die Zahnentwicklung von *Chlamydoselachus anguineus* Garman.

Schwalbe's Morpholog. Arbeiten, iv, pp. 193–206, with 12 figs. in the text.

—— 1894 B

Ueber die Zahnentwicklung der Fische.

Anatom. Anzeiger, ix, pp. 653–662, with 8 figs. in the text.

—— 1895 A

Das Zahnsystem der Wirbelthiere.

Merkel and Bonnet's Anat. Hefte, Ergebnisse, iv, 1894, pp. 542–591.

List of 248 titles of papers bearing on the subject.

Reviewed by M. Schlosser in Archiv f. Anthrop., xxv, pp. 193–195.

—— 1897 A

Ueber die verschiedenen Abänderungen der Hartgewebe bei niederen Wirbeltieren.

Anatom. Anzeiger, xiv, pp. 33–69, with 28 figs. in the text.

Röse, C., and **Bartels**, O. 1896 A

Ueber die Zahnentwicklung des Rindes.

Schwalbe's Morpholog. Arbeiten, vi, pp. 49–118, with 39 figs. in the text.

Reviewed by M. Schlosser in Archiv f. Anthrop., xxv, pp. 234–235.

Roger, Otto. 1887 A

Ueber die Hirsche.

Correspondenzblatt Vereins Regensb., 1887, Sept., p. 43, with 2 pls.

—— 1889 A

Ueber die Umbildungen des Säugethierskeletes und die Entwicklungsgeschichte der Pferde.

Abhandl. Vereins Regensb., 1889, p. 35.

Reviewed by M. Schlosser in Archiv f. Anthrop., xx, pp. 152–154.

—— 1896 A

Verzeichniss der bisher bekannten fossilen Säugethiere. Neu zusammengestellt von Dr. Otto Roger, kgl. Regierungs-und Kreis-Medizinrath in Augsburg.

Bericht naturwiss. Vereins f. Schwaben und Neuburg (a. V.), xxxii, pp. 1–272.

This is a systematic list of described fossil vertebrates, with references to places of publication of descriptions.

Rogers, Henry D. 1842 A

Report on the *Ornithichnites*, or footmarks of extinct birds in the New Red sandstone of Massachusetts and Connecticut, observed and described by Prof. Hitchcock, of Amherst. Signed by H. D. Rogers, Lardner Vanuxum, Richard C. Taylor, Ebenezer Emmons, T. A. Conrad.

Ann. Nat. Hist., viii, pp. 235–238.

—— 1845 A

Remarks upon the bones of *Zeuglodon*.

Proc. Boston Soc. Nat. Hist., ii, p. 79.

—— 1851 A

On the position and characters of the reptilian footprints in the Carboniferous red-shale formation of eastern Pennsylvania.

Proc. Amer. Assoc. Adv. Sci., 4th meeting, New Haven, 1850, pp. 250–251.

—— 1854 A

Communication on the epoch of the mammoth.

Proc. Boston Soc. Nat. Hist., v, pp. 22–23.

—— 1855 A

Remarks on fossil footprints found in Carboniferous sandstones of Pennsylvania.

Proc. Boston Soc. Nat. Hist., v, pp. 182–186.

—— 1865 A

On a peculiar fossil found in the Mesozoic sandstone of the Connecticut

Rogers, Henry D.—Continued.

valley, discovered by Prof. W. B. Rogers.

Report Brit. Assoc. Adv. Sci., 34th meeting, Bath, 1864, p. 66.

Zoological position of fossil not determined.

Rohon, J. Victor. 1889 A

Ueber fossile Fische.

Mém. Acad. Imp. Sci., St. Pétersbourg (7), xxxvi, No. 73, pp. 1-17; pls. i, ii.

Contains remarks on the structure of the teeth of *Acanthodes* and *Palæoniscus*, with illustrations.

—— 1889 B

Die Dendrodonten des devonischen Systems in Russland. Palæontologische und vergleichend-anatomische Studie.

Mém. Acad. Imp. Sci., St. Pétersbourg (7), xxxvi, No. 14, pp. 1-52, with pls. i, ii and 1 text fig. giving a restoration of *Dendrodus*.

—— 1891 A

Ueber *Pterichthys*.

Verhandl. russ.-kais. mineralog. Gesellsch. St. Petersburg (2), xxviii, pp. 292-315, with pl. vii.

—— 1892 A

Ueber devonische Fische vom oberen Jenissei nebst Bemerkungen über die Wirbelsäule devonischer Ganoiden.

Mélanges géol. et paléont. Acad. Imp. Sci. St. Pétersbourg, vol. i, pp. 17-34, with 1 pl.

This paper was published earlier in Bull. Acad. St. Pétersbourg (2), i, 1890, pp. 393-410.

—— 1892 B

Holoptychius-Schuppen in Russland.

Mélanges géol. et paléont. Acad. Imp. Sci. St. Pétersbourg, i, pp. 35-56, with 1 pl.

—— 1892 C

Die obersilurische Fische von Oesel. I Theil, *Thyestidæ* und *Tremataspidæ*.

Mém. Acad. Imp. Sci. St. Pétersbourg (7), xxxviii, No. 13, pp. 1-88, with pls. i-ii.

—— 1893 A

Die obersilurischen Fische von Oesel. II Theil, *Selachii*, *Dipnoi*, *Ganoidei*, *Pteraspidæ* und *Cephalaspidæ*.

Mém. Acad. Imp. Sci. St. Pétersbourg (7), xli, No. 5, pp. 1-124, with pls. i-iii and 29 text figs.

—— 1894 A

Metamerie am Primordial-cranium palæozoischer Fische.

Zoolog. Anzeiger, xvii, pp. 51-52.

A brief communication regarding the metamery of the primordial skull of *Thyestes* and *Tremataspis*.

Rohon, J. Victor—Continued. 1894 B

Zur Kenntnis der Tremataspiden (Nachtrag zu den Untersuchungen über "Die obersilurischen Fische von Oesel").

Mélanges géol. et paléont. Acad. Imp. Sci. St. Pétersbourg, vol. i, pp. 177-201, with 2 pls.

—— 1895 A

Beitrag zur Kenntniss der Gattung *Ptyctodus*.

Verhandl. russ.-kais. mineralog. Gesellsch. St. Petersburg (2), xxxiii, pp. 1-16, with pl. i.

—— 1895 B

Die Segmentirung am Primordialcranium der obersilurischen Thyestiden.

Verhandl. russ.-kais. mineralog. Gesellsch. St. Petersburg (2), xxxiii, pp. 17-64, with pl. ii.

—— 1896 A

Weitere Mittheilungen über die Gattung *Thyestes*.

Bull. Acad. Imp. Sci. St. Pétersbourg, iv, pp. 223-235, with 1 pl.

—— 1896 B

Beiträge zur Classification der palæozoischen Fische.

Sitzungsber. k. böhm. Gesellsch. Wissensch., math.-naturw. Cl., 1896, ii, art. xxxvii, pp. 1-33, with 8 text figs.

—— 1898 A

Bau der obersilurischen Dipnoer-Zähne.

Sitzungsber. k. böhm. Gesellsch. Wissensch., math.-naturw. Cl., 1898, art. xi, pp. 1-17, with plate of 11 figs.

Romanovski, G. 1853 A

Ueber eine neue Gattung versteinerter Fisch-Zähne.

Bull. Soc. Imp. Natur. Moscou, xxvi, pt. i, pp. 405-409, with pl. viii.

Describes genus *Dicrenodus*, type *D. okensis*.

—— 1857 A

Ueber die Verschiedenheit der beiden Arten: *Chilodus tuberosus* Gieb. und *Dicrenodus okensis* Rom.

Bull. Soc. Imp. Natur. Moscou, xxx, pt. i, pp. 290-295, with 4 text figs.

—— 1864 A

Description de quelques restes de poissons fossiles trouvés dans le calcaire carbonifère du gouvernement de Toula.

Bull. Soc. Imp. Natur. Moscou, xxxvii, pt. 2, pp. 157-170, with pls. iii, iv.

Rosenberg, Emil. 1891 A

Ueber einige Entwicklungsstadien des Handskelets der *Emys lutaria marsili*.

Morpholog. Jahrbuch, xviii, pp. 1–34, with pl. i.

In the footnotes are found numerous references to the literature bearing on the subject.

Rouault, Marie. 1858 A

Note sur les vertébrés fossiles des terrains sedimentaires de l'ouest de la France.

Comptes rend. Acad. Sci. Paris, xlvii, pp. 99–103.

The genus *Nummopalatus* is here established, p. 101.

Ruddick, W. H. See **Kingsley** and **Ruddick.**

Rütimeyer, L. 1857 A

Ueber schweizerische Anthracotherien.

Verhandl. naturf. Gesellsch. Basel, i, pp. 385–403.

—— 1857 B

Ueber lebende und fossile Schweine.

Verhandl. naturf. Gesellsch. Basel, i, pp. 517–554.

—— 1857 C

Ueber *Anthracotherium magnum* und *hippoideum*.

Neue Denkschr. schweizer. Gesellsch. Naturwiss., xv, art. viii, pp. 1–32, with pls. i, ii.

—— 1862 A

Beiträge zur Kenntniss der fossilen Pferde und zur vergleichenden Odontographie der Hufthiere überhaupt.

Verhandl. naturf. Gesellsch. Basel, iii, pp. 558–696, with pls. i–iv.

—— 1862 B

Die Fauna der Pfahlbauten der Schweiz.

Neue Denkschr. schweizer. Gesellsch. Naturwiss., ix, pp. 1–248, with pls. i–vi.

—— 1865 A

Beiträge zu einer palæontologischen Geschichte der Wiederkauer, zunächst an Linné's Genus *Bos*.

Verhandl. naturf. Gesellsch. Basel, iv, pp. 299–354.

—— 1867 A

Die fossilen Schildkröten von Solothurn.

See Lang, Fr., and Rütimeyer, L., 1867 A.

—— 1867 B

Versuch einer natürlicher Geschichte des Rindes, in seinen Beziehungen zu den Wiederkauern im Allgemeinen. Erste Abth.

Neue Denkschr. schweizer. Gesellsch. Naturwiss., xxii, pp. 1–102, with pls. i, ii.

—— 1868 A

Versuch einer natürlicher Geschichte des Rindes, in seinen Beziehungen zu den Wiederkauern im Allgemeinen. Zweite Abth.

Neue Denkschr. schweizer. Gesellsch. Naturwiss., xxiii, pp. 1–175, with pls. i–iv, and 25 figs. in the text.

—— 1873 A

Die fossilen Schildkröten von Solothurn und der übrigen Juraformation. Mit Beiträgen zur Kenntniss von Bau und Geschichte der Schildkröten im Allgemeinen.

Neue Denkschr. schweizer. Gesellsch. Naturwiss., xxv, art. 2, pp. 1–185, with pls. i–xvii.

—— 1874 A

Ueber den Bau von Schale und Schädel bei lebenden und fossilen Schildkröten, als Beitrag zu einer palæontologischen Geschichte dieser Thiergruppe.

Verhandl. naturf. Gesellsch. Basel., vi, pp. 1–137.

—— 1875 A

Weitere Beiträge zur Beurtheilung der Pferde der Quaternär-Epoche.

Abhandl. schweizer. paläontolog. Gesellsch., ii, pp. 1–34, with 3 pls.

Contains discussion of the teeth of living species of horses.

—— 1877 A

Die Rinder der Tertiär-Epoche, nebst Vorstudien zu einer natürlichen Geschichte der Antilopen. Erster Theil. Mit drei Doppeltafeln.

Abhandl. schweizer. paläontolog. Gesellsch., iv, pp. 1–72.

—— 1878 A

Die Rinder der Tertiär-Epoche, nebst Vorstudien zu einer natürlichen Geschichte der Antilopen. Zweiter Thiel. Mit vier Doppeltafeln nebst Holzschnitten.

Abhandl. schweizer. paläontolog. Gesellsch., v, pp. 1–208.

—— 1881 A

Beiträge zu einer natürlichen Geschichte der Hirsche. I Theil.

Abhandl. schweizer. paläontolog. Gesellsch., vii, pp. 1–8; viii, pp. 9–95, with 4 pls.

Introduction, with pls. i and ii in vol. vii, 1880.

Rütimeyer, L.—Continued. 1882 A

Studien zu der Geschichte der Hirschfamilie. I. Schädelbau.

Verhandl. naturf. Gesellsch. Basel, vii, pp. 3-61.

—— 1883 A

Beiträge zu einer natürlichen Geschichte der Hirsche.

Abhandl. schweizer. paläontolog. Gesellsch., x, pp. 1-120, with pls. v-x.

—— 1884 A

Studien zu der Geschichte der Hirschfamilie. II. Gebiss.

Verhandl. naturf. Gesellsch. Basel, vii, pp. 399-464.

—— 1888 A

Ueber einzige Beziehungen zwischen den Säugethierstämmen alter und neuer Welt. Erster Nachtrag zu der eocänen Fauna von Egerkingen.

Abhandl. schweizer. paläontolog. Gesellsch., xv, pp. 1-63, pl. 1.

Reviewed by M. Schlosser in Archiv f. Anthrop., xix, pp. 141-145.

—— 1890 A

Uebersicht der eocänen Fauna von Egerkingen nebst einer Erwiederung an Prof. E. D. Cope. Zweiter Nachtrag zu der eocänen Fauna von Egerkingen (1862).

Abhandl. schweizer. paläontolog. Gesellsch., xvii, pp. 1-24.

See also Verhandl. naturf. Gesellsch. Basel, 1891, ix, pp. 331-362. For review by M. Schlosser, see Archiv f. Anthrop., xx, pp. 113-114.

Contains a discussion of foot structure.

—— 1891 A

Die eocäne Säugethier-Welt von Egerkingen. Gesammtdarstellung und dritter Nachtrag zu den "Eocänen Säugethieren aus dem Gebiet des schweizerischen Jura (1862)."

Abhandl. schweizer. paläontolog. Gesellsch., xviii, pp. 1-153, with pls. i-viii.

Reviewed by M. Schlosser in Archiv f. Anthrop., xxiii, pp. 139-141.

—— 1892 A

Die eocänen Säugethiere von Egerkingen.

Verhandl. naturf. Gesellsch. Basel, x, pp. 101-129, with figs. A-I in the text.

Discusses the teeth of *Mammalia* and the relationships of the mammals of Egerkingen to those of the American Eocene.

See also **Lang** and **Rütimeyer.**

Ryder, John A. 1877 A

On the evolution and homologies of the incisors of the horse.

Proc. Acad. Nat. Sci. Phila., 1877, pp. 152-154.

—— 1877 B

On the laws of digital reduction.

Amer. Naturalist, xi, pp. 603-607.

—— 1878 A

On the mechanical genesis of tooth-forms.

Proc. Acad. Nat. Sci. Phila., 1878, pp. 45-80, with 11 figs. in the text.

Reviewed in Amer. Naturalist, xiii, pp. 446-449.

—— 1879 A

Further notes on the mechanical genesis of tooth-forms.

Proc. Acad. Nat. Sci. Phila., 1879, pp. 47-51.

—— 1879 B

On the origin of bilateral symmetry and the numerous segments of the soft rays of fishes.

Amer. Naturalist, xiii, pp. 41-43.

—— 1885 A

On the morphology and evolution of the tails of osseous fishes.

Proc. Amer. Assoc. Adv. Sci., 33d meeting, Phila., 1884, pp. 532-533.

Abstract of paper read.

—— 1885 B

The development of the rays of osseous fishes.

Amer. Naturalist, xix, pp. 200-204, with 5 figs.

—— 1885 C

On the translation forwards of the rudiments of the pelvic fins of physoclist fishes.

Amer. Naturalist, xix, pp. 315-317.

—— 1885 D

On the probable origin, homologies, and development of the flukes of cetaceans and sirenians.

Amer. Naturalist, xix, pp. 515-519.

—— 1886 A

On the origin of heterocercy and the evolution of the fins and fin rays of fishes.

Report U. S. Fish Com. for 1884, pp. 981-1107, pls. i-xi.

—— 1890 A

The continuity of the primary matrix of the scales and the actinotrichia of Teleosts.

Amer. Naturalist, xxiv, pp. 489-491.

Ryder, John A.—Continued. 1892 A

On the mechanical genesis of the scales of fishes.

Proc. Acad. Nat. Sci. Phila., 1892, pp. 219–224, with 3 figs. in the text.

See notice of, in Amer. Naturalist, xxvii, p. 391.

Reprinted in Ann. and Mag. Nat. Hist. (6), xi. pp. 243–248.

Safely, Robert. 1866 A

Discovery of mastodon remains at Cohoes, N. Y.

Amer. Jour. Sci. (2), xlii, p. 426.

Safford, J. M. 1853 A.

Tooth of *Getalodus ohioensis.*

Amer. Jour. Sci. (2), xvi, p. 142, with 2 figs. in the text.

"*Getalodus*" is an evident misprint for *Petalodus.*

—— 1892 A

The pelvis of a *Megalonyx* and other bones from Big Bone Cave, Tennessee.

Bull. Geol. Soc. America, iii, pp. 121–123.

—— 1892 B

Exhibition of certain bones of the *Megalonyx* not before known.

Proc. Amer. Assoc. Adv. Sci., 40th meeting, Washington, 1891, p. 289.

Abstract of Safford, 1892 A.

Sagemehl, M. 1883 A

Beiträge zur vergleichenden Anatomie der Fische. I. Das Cranium von *Amia calva* L.

Morpholog. Jahrbuch, ix, pp. 177–228, with pl. x.

—— 1884 A

Beiträge zur vergleichenden Anatomie der Fische. III. Das Cranium der Chariciniden nebst allgemeinen Bemerkungen über die mit einem Weber'schen Apparat versehenen Physostomenfamilien.

Morpholog. Jahrbuch, x, pp. 1–119, with pls. i and ii and 1 woodcut.

—— 1891 A

Beiträge zur vergleichenden Anatomie der Fische.

Morpholog. Jahrbuch, xvii, pp. 489–595, with pls. xxviii–xxix.

Contains numerous citations of the literature of the subject.

St. Hilaire, Geoffroy, 1809 A

Sur les tortues molles, nouveau genre sous le nom de *Trionyx,* et sur la formation des carapaces.

Ann. Mus. d'Hist. Nat. Paris, xiv, pp. 1–20, with pls. i–v.

St. John, Orestes H. 1870 A

Descriptions of fossil fishes from the upper Coal-measures of Nebraska.

Proc. Amer. Philos. Soc., xi, pp. 431–437.

—— 1872 A

Descriptions of fossil fishes from the upper Coal-measures of Nebraska.

Final report U. S. Geol. Surv. of Nebraska and portions of the adjacent Territories, pp. 239–245; pls. iii, iv and vi.

St. John, O. H., and **Worthen,** A. H. 1875 A

Descriptions of fossil fishes.

Geol. Surv. Illinois, A. H. Worthen, director, vi, pp. 245–488, with pls. i–xxii.

Contains descriptions and figures of fossil fishes of the Carboniferous and Subcarboniferous, especially of Illinois.

—— —— 1883 A

Descriptions of fossil fishes. A partial revision of the Cochliodonts and Psammodonts, including notices of miscellaneous materials acquired from the Carboniferous formations of the United States.

Geol. Surv. Illinois, A. H. Worthen, director, vii, 1883, pp. 55–264, pls. i–xxvi.

St. John, Samuel. 1851 A

On a specimen of the fossil ox (*Bos bombifrons*) found in Trumbull County, Ohio.

Proc. Amer. Assoc. Adv. Sci., v, p. 235. Title only.

Specimen referred by Leidy (Leidy, 1869 A, p. 374) to *B. cavifrons.*

Salensky, W. 1899 A

Zur Entwicklungsgeschichte des Ichthyopterygiums.

Proc. 4th Internat. Congress of Zoology, Cambridge, Eng., 1898, pp. 177–183.

Salter, J. W. 1867 A

On the tracks of *Pteraspis* (?) in the Upper Ludlow sandstone.

Quart. Jour. Geol. Soc., xxiii, pp. 333–339, with figs. in the text.

Sanson, A. 1878 A

Détermination spécifique des ossemens fossiles ou anciens de bovides.

Comptes rend. Acad. Sci. Paris, lxxxvii, pp 756–759.

Saporta, Gaston de. 1877 A

Letters to Dr. F. V. Hayden.

Amer. Naturalist, xi, pp. 187–188.

Expresses gratification at the progress of palæontology in North America.

Sauvage, H. E. 1870 A

Recherches sur les poissons fossiles des terrains crétacés de la Sarthe.

Ann. Sci. Géol., Paris, ii, art. 7, pp. 1–44, with pls. xvi, xvii (figs. 1–89).

—— 1873 A

De la classification des poissons que composent le famille des Triglides (Joues-cuirassées de Cuvier et Valenciennes).

Comptes rend. Acad. Sci. Paris, lxxvii, pp. 723–726.

—— 1874 A

Revision des espèces dn groupe des épinoches.

Nouv. Arch. du Mus. d'Hist. Nat. Paris, x, pp. 5–38, with pl. i.

—— 1874 B

Mémoire sur les dinosauriens et les crocodiliens des terrains jurassiques de Boulogne-sur-mer.

Mém. Soc. Géol. France (2), x, pp. 1–57, with pl. v–x.

—— 1875 A

Note sur les poissons fossiles.

Bull. Soc. Géol. France (3), iii, pp. 631–642; pls. xxii, xxiii.

—— 1875 B

Note sur le genre *Nummopalatus* et sur les espèces de ce genre trouvés dans les terraines tertiaires de la France.

Bull. Soc. Géol. France (3), iii, pp. 613–642, with pls. xxii, xxiii.

—— 1876 A

Notes sur les reptiles fossiles.

Bull. Soc. Géol. France (3), iv, pp. 435–442, pls. xi–xii.

Treats of *Polycotylus*, *Iguanodon*, etc.

—— 1878 A

Prodrome des Plésiosauriens et Élasmosauriens des formations jurassiques supérieures de Boulogne-sur-mer.

Ann. Sci. Naturelles (6), Zool., viii, art. 13, pp. 1–38, pls. xxvi, xxvii.

—— 1878 B

Description de poissons nouveaux ou imparfaitement connus de la collection du Muséum d'Histoire Naturelle Famille des Scorpénidées, des Platycephalides et des Triglidées.

Nouv. Arch. du Mus. d'Hist. Nat. Paris (2), i, pp. 109–158, with pls. i, ii.

—— 1879 A

Étude sur les poissons et les reptiles des terrains crétacés et jurassiques supérieurs de l'Yonne.

Bull. Soc. Sci. hist. et nat. de l'Yonne, xxxiii, pp. 20–84, with pls. i–viii.

Sauvage, H. E.—Continued. 1887 A

Note sur l'arc pectoral d'un Ichthyosaure du Lias.

Bull. Soc. Géol. France (3), xv, pp. 726–728, pl. xxvii.

—— 1888 A

Poissons du terrain houiller de Commentry; I. Coup d'œil sur la faune ichthyologique du terrain carbonifère et du terrain houiller; II. La faune ichthyologique de Commentry; III. Description des espèces Famille des Palæoniscidées.

Bull. Soc. de l'Industrie Min. (3), ii livrais. 4^{me}, pp. 39–120.

Savage, J. 1878 A

On mastodon remains in Douglas County [Kansas].

Trans. Kansas Acad. Sci., vi, pp. 10, 11.

Scheidt, Paul. 1894 A

Morphologie und Ontogonie des Gebisses der Hauskatze.

Morpholog. Jahrbuch, xxi, pp. 425–462, with pl. xii.

Schenk, F. 1897 A

Studien über die Entwicklung des knöchernen Unterkiefers der Vögel.

Sitzungsber. k. p. Akad. Wissensch. Wien, math.-naturw. Cl., cvi, Abth. iii, pp. 319–344, with pls. i–v.

Schlosser, M. 1883 A

Über *Chalicotherium*-Arten.

Neues Jahrb. Mineral., 1883, ii, pp. 164–169.

—— 1884 A

Die Nager des europäischen Tertiars nebst Betrachtungen über die Organization und die geschichtliche Entwicklung der Nager überhaupt.

Palæontographica, xxxi, pp. 9–162, with pls. v–xii.

Nachtrag und Berichtigungen zu "Die Nager des europäischen Tertiärs," xxxi, pp. 323–328.

—— 1884 B

Nachträge und Berichtigungen zu: die Nager des europäischen Tertiärs. Palaeontographica. 31. Band.

Zoolog. Anzeiger, vii, pp. 639–647.

—— 1884 C

Literaturbericht in Beziehung zur Anthropologie mit Einschluss der fossilen und recenten Säugethiere.

Archiv f. Anthrop., xvi, pp. 98–135.

—— 1885 A

Zur Stammesgeschichte der Hufthiere.

Zoolog. Anzeiger, viii, pp. 683–691.

Schlosser, M.—Continued. 1886 A

Zur Stammesgeschichte der Hufthiere.

Zoolog. Anzeiger, ix, pp. 252-256, 432-433.

Pp. 432-433 are entitled: Erklärung.

—— 1886 B

Beiträge zur Kenntnis der Stammesgeschichte der Hufthiere und Versuch einer Systematik der Paar- und Unpaarhufer.

Morpholog. Jahrbuch, xii, pp. 1-136, with pls. i-vi.

Abstract in Archiv f. Anthrop., xviii, pp. 131-139.

—— 1886 C

Palæontologische Notizen. Ueber das Verhältnis der Cope'schen *Creodonta* zu den übrigen Fleischfressern.

Morpholog. Jahrbuch, xii, pp. 287-298.

Abstract in Archiv f. Anthrop., xviii, pp. 130-131.

—— 1886 D

Literaturbericht in Beziehung zur Anthropologie mit Einschluss der fossilen und recenten Säugethiere für 1884, 1885.

Archiv f. Anthrop., xvii, pp. 118-194.

—— 1887 A

Erwiederung gegen E. D. Cope.

Morpholog. Jahrbuch, xii, pp. 575-580.

Reply to review by Professor Cope in Amer. Naturalist, 1886, pp. 719-721 (Cope, E. D., 1886 K).

—— 1887 B

Die Affen, Lemuren, Chiropteren, Insectivoren, Marsupialier, Creodonten und Carnivoren des europäischen Tertiärs und deren Beziehungen zu ihren lebenden und fossilen aus europäischen Verwandten.

Beiträge Palæontologie Oesterreich-Ungarns und des Orients (Mojsisovics und Neumayr), vi, Heft. i und ii, pp. 1-227, with pls. i-ix.

Abstract in Archiv f. Anthrop., xvii, pp. 279-285.

—— 1887 C

Literaturbericht in Beziehung fur Anthropologie mit Einschluss der fossilen und recenten Säugethiere für 1886.

Archiv f. Anthrop., xviii, pp. 105-152.

—— 1888 A

Ueber die Beziehungen der ausgestorbenen Säugetierfaunen und ihr Verhältniss zur Säugetierfauna der Gegenwart.

Biolog. Centralbl., viii, pp. 582-600, 609-631.

Abstract in Archiv f. Anthrop., xx, pp. 154-160.

—— 1888 B

Die Affen, Lemuren, Chiropteren, Insectivoren, Marsupialier, Creodonten und Carnivoren des europäischen Tertiärs und deren Beziehungen zu ihren lebenden und fossilen aussereuropäischen Verwandten. Part II.

Beiträge Palæontologie Oesterreich-Ungarns und des Orients (Mojsisovics und Neumayr), vii, pp. 1-162.

Abstract in Archiv f. Anthrop., xvii, pp. 285-300, with pl. xii.

—— 1889 A

Ueber die Modificationen des Extremitätenskelets bei den einzelnen Säugetierstämmen.

Biolog. Centralbl., ix, pp. 684-696, 716-729.

—— 1889 B

Literaturbericht für Zoologie in Beziehung zur Anthropologie mit Einschluss der fossilen und recenten Säugethiere für das Jahr 1887 [and 1888].

Archiv f. Anthrop., xix, pp. 78-164.

The notices of the literature for 1887 occupies pp. 78-116; for that of 1888, pp. 117-164.

—— 1890 A

Ueber die Deutung des Milchgebisses der Säugetiere.

Biolog. Centralbl. x, pp. 81-92.

Abstract in Archiv f. Anthrop., xxi, pp. 136-137.

—— 1890 B

Die Affen, Lemuren, Chiropteren, Insectivoren, Marsupialier, Creodonten und Carnivoren des europäischen Tertiärs.

Beiträge Paläontologie Oesterreich-Ungarns und des Orients (Mojsisovics und Neumayr), viii, pp. 1-107. [387-492.]

Abstract in Zoolog. Record for 1890, Mamm. p. 14.

Mention is made in this work of many American forms, and their relationships are discussed.

—— 1890 C

Die Differenzierung des Säugetiergebisses.

Biolog. Centralbl. x, pp. 238-252; 264-277, with 7 figs. in the text.

Abstract in Archiv f. Anthrop., xxi, pp. 132-136.

Schlosser, M.—Continued. 1890 D

Ueber die Modificationen des Extremitätenskelets bei den einzelnen Säugethierstämmen.

Biolog. Centralbl., x, pp. 684-698; 716-729.

—— 1890 E

Literaturbericht für Zoologie in Beziehung zur Anthropologie mit Einschluss der lebenden und fossilen Säugethiere für das Jahr 1889.

Archiv f. Anthrop., xx, pp. 113-161.

—— 1891 A

Literaturbericht für Zoologie in Beziehung zur Anthropologie mit Einschluss der lebenden und fossilen Säugethiere für das Jahr 1890.

Archiv f. Anthrop., xxi, pp. 97-141.

—— 1892 A

Die Entwickelung der verschiedenen Säugethierzahnformen im Laufe der geologischen Perioden.

Verhandl. deutsch. odontolog. Gesellsch., iii, pp. 203-230.

—— 1892 B

Literaturbericht für Zoologie in Beziehung zur Anthropologie mit Einschluss der lebenden und fossilen Säugethiere für das Jahr 1891.

Archiv f. Anthrop., xxii, pp. 89-130.

—— 1893 A

Ueber die Deutung des Milchgebisses der Säugethiere.

Verhandl. deutsch. odontolog. Gesellsch., iv, pp. 296-307, with 1 text fig.

Followed by Dr. Röse on same subject.

—— 1893 B

Literaturbericht für Zoologie in Beziehung zur Anthropologie mit Einschluss der lebenden und fossilen Säugethiere für das Jahr 1892.

Archiv f. Anthrop., xxiii, pp. 111-160.

—— 1894 A

Bemerkungen zu Rütimeyer's "eocäne Säugethierwelt von Egerkingen."

Zoolog. Anzeiger, xvii, pp. 157-162.

—— 1895 A

Literaturbericht für Zoologie in Beziehung zur Anthropologie mit Einschluss der lebenden und fossilen Säugethiere für das Jahr 1893 [and 1894].

Archiv f. Anthrop., xxiv, pp. 101-182.

Pp. 101-145 are occupied with the literature of 1893; pp. 146-182 with that of 1894.

Schlosser, M.—Continued. 1897 A

Literaturbericht für Zoologie in Beziehung zur Anthropologie mit Einschluss der lebenden und fossilen Säugethiere für das Jahr 1895 [and 1896].

Archiv f. Anthrop., xxv, pp. 157-244.

Pp. 157-198 are taken up with the literature of 1895; pp. 198-244 with that for 1896.

—— 1898 A

Literaturbericht für Zoologie in Beziehung zur Anthropologie mit Einschluss der lebenden und fossilen Säugethiere für das Jahr 1897.

Archiv f. Anthrop., xxvi, pp. 151-199.

—— 1899 A

Parailurus anglicus and *Ursus böckii* aus den Ligniten von Baróth-Köpecz, Comitat Háromszék in Ungarn.

Mittheil. Jahrb. der kgl. ungar. geol. Anstalt, xiii, pp. 67-95, with pls. x-xii.

—— 1899 B

Uber die Bären und bärenähnlichen Formen des europäischen Tertiärs.

Palæontographica, xlvi, pp. 95-147, with pls. xiii, xiv.

—— 1900 A

Ursus oder *Ursavus* oder *Hyaenarctos?*

Centralbl. Min., Geol., Palæont., 1900, pp. 261-265; with 3 figs. in the text.

Schlüter, Clemens. 1881 A

Ueber die Fischgattung *Ancistrodon.*

Verhandl. naturf. Vereines preuss. Rheinlande, xxxviii, pp. 61-62 with 3 figs. in the text.

Schmidt, Friedrich. 1866 A

Ueber *Thyestes verrucosus* Eichw., und *Cephalaspis schrenckii* Pand., nebst einer Einleitung über das Vorkommen silurischer Fischreste auf der Insel Oesel.

Verhandl. russ.-kais. mineralog. Gesellsch. St. Petersburg (2), i, pp. 217-250, with pls. iv-vi.

—— 1872 A

Wissenschaftliche Resultate der zur Aufsuchung eines angekündigten Mammuthcadavers von der Kaiserlichen Akademie der Wissenschaften an den unteren Jenissei ausgesandten Expedition.

Mém. Acad. Imp. Sci. St.-Pétersbourg (7), xviii, pp. i-vi; 1-168.

Pp. 28-36 are devoted to "Das Mammuth und seine Lagerstätte."

Schmidt, Friedrich—Cont'd. 1873 A

Note on *Pteraspis kneri*.

Geol. Magazine, x, pp. 152-153, with 3 figs. in the text.

—— 1873 B

Further remarks on *Pteraspis*.

Geol. Magazine (1), x, pp. 330-331.

The author claims to have found osseous lacunæ in the shield of *Pteraspis*. See, also, reply by E. R. Lankester, this volume, p. 478.

—— 1873 C

Ueber die Pteraspiden überhaupt und über *Pteraspis kneri* aus den obersilurischen Schichten Galiziens insbesondere.

Verhandl. russ.-kais. mineralog. Gesellsch. St. Petersburg (2), viii, pp. 132-152, with pl. v.

—— 1894 A

Ueber *Cephalaspis* (*Thyestes*) *schrencki* Pand. aus dem Obersilur von Rotzeküll auf Oesel.

Mélanges géol. et paléont. Acad. Imp. Sci. St. Pétersbourg, i, pp. 203-210, with 1 pl.

Schmidt, Oscar. 1886 A

The *Mammalia* in their relation to primeval times.

Pp. i-xxii; 1-308, with 51 woodcuts. 8vo. New York, D. Appleton and Co.

Schneider, Anton. 1886 A

Ueber die Flossen der *Dipnoi* und die Systematik von *Lepidosiren* und *Protopterus*.

Zoolog. Anzeiger, ix, pp. 521-524.

Schuchert, Charles. 1900 A

[Account of visits to Alabama, for the purpose of collecting bones of the zeuglodon.]

Proc. U. S. Nat. Mus., xxiii, pp. 328-329.

This account is incorporated in paper by F. A. Lucas (Lucas, F. A., 1900 E).

Schulze, Eilhard. 1894 A

Ueber die Abwärtsbiegung des Schwanztheiles der Wirbelsäule bei *Ichthyosaurus*.

Sitzungsber. k. p. Akad. Wissensch. Berlin. 1894, pp. 1133-1134.

Schwalbe, G. 1894 A

Ueber Theorien der Dentition.

Verhandl. anatom. Gesellsch., 8th meeting, 1894, pp. 5-45.

Appended is a list of 80 papers on the subject discussed.

Abstract of, by M. S. Schlosser in Archiv f. Anthrop., xxiv, pp. 179-180.

Science. 1885 A

Professor Marsh on the *Dinocerata*.

Science, v, pp. 488-490, with 1 map and 1 woodcut.

A review of Marsh, O. C., 1884 F, with correction in vol. vi, p. 454.

—— 1885 B

The relationships between dinosaurs and birds.

Science, vi, p. 295.

A review of Prof. B. Vetter's article in Festschrift der naturw. Gesellsch. Isis in Dresden, May, 1885, pp. 109-122.

—— 1885 C

[Prof. O. C. Marsh on the brains of Tertiary vertebrates. A notice of his address before the British Association for the Advancement of Science.]

Science, vi, p. 360.

Scott, W. B. 1883 A

Two new Eocene lophiodonts.

Contrib. E. M. Mus. Geol. and Arch.; Princeton Coll. Bull. No. 3, pp. 46-53, with pl. viii.

Describes *Desmatotherium guyotii* and *Dilophodon minusculus*.

—— 1884 A

A new marsupial from the Miocene of Colorado.

Amer. Jour. Sci. (3), xxvii, pp. 442-443, with 1 fig. in the text.

—— 1884 B

[Communication to Princeton Science Club relative to the hind foot of the American *Entelodon*.]

Science, iii, p. 266.

—— 1884 C

[Abstract of paper read before the Amer. Assoc. Adv. Sci., 1884, on the osteology of *Oreodon*.]

Science, iii, p. 342.

—— 1885 A

A fossil elk or moose from the Quaternary of New Jersey (*Cervalces americanus*.)

Science, v, pp. 420-422, with two woodcuts.

Notice of this paper in Amer. Naturalist, xix, p. 495.

—— 1885 B

The osteology of *Oreodon*.

Proc. Amer. Assoc. Adv. Sci., 33d meeting, Phila., 1884, pp. 492-493.

An abstract of paper read.

—— 1885 C

Cervalces americanus, a fossil moose or elk from the Quaternary of New Jersey.

Proc. Acad. Nat. Sci. Phila., 1885, pp. 174-202, with pl. ii and 7 figs. in the text.

Scott, W. B.—Continued. 1885 D

Cervalces americanus.

Fourth annual report E. M. Mus. Geol. and Arch., Princeton Coll., pp. 4–6, with pl.

—— 1886 A

On some new forms of the *Dinocerata.*

Amer. Jour. Sci. (3), xxxi, pp. 303–307, with 4 figs. in the text.

—— 1886 B

Some points in the evolution of the horses.

Science, vii, p. 13, with 2 woodcuts.

—— 1887 A

On American elephant myths.

Scribner's Magazine, i, pp. 469–478, with 10 text figs.

—— 1888 A

Origin of American *Carnivora.*

Proc. Amer. Assoc. Adv. Sci., 36th meeting, New York, 1887, pp. 258–259.

Abstract of paper read.

—— 1888 B

On some new and little-known creodonts.

Jour. Acad. Nat. Sci. Phila. (2), ix, pp. 155–185, pls. v–vii.

Extra copies printed in advance for the author Oct. 10, 1887.

Reviewed by M. Schlosser in Archiv f. Anthrop., xviii, pp. 139–140.

—— 1889 A

A comparison of the American and European Tertiary *Mammalia.*

Princeton Coll. Bull., i, pp. 20–21.

—— 1889 B

Notes on the osteology and systematic position of *Dinictis felina*, Leidy.

Proc. Acad. Nat. Sci. Phila., 1889, pp. 211–244, with 7 figs. in the text.

Abstract in Princeton Coll. Bull., i, p. 118, 1889.

—— 1889 C

The *Oreodontidæ.*

Princeton Coll. Bull., i, pp. 75–77.

—— 1890 A

The *Mammalia* of the Uinta formation. Part I. The geological and faunal relations of the Uinta formation. Part II. The *Creodonta*, *Rodentia*, and *Artiodactyla.*

Trans. Amer. Philos. Soc., xvi, pp. 461–504, with pls. vii, x, and xi.

This forms a portion of a joint paper by Professors Scott and Osborn. See Osborn, H. F. 1890 D, and Scott and Osborn, 1890 A.

Notice of, occurs in Princeton Coll. Bull., ii, p. 46.

Scott, W. B.—Continued. 1890 B

Beiträge zur Kenntniss der *Oreodontidæ.*

Morpholog. Jahrbuch, xvi, pp. 319–395, with pls. xii–xvi and 10 figs. in the text.

For review of this paper, by R. Lydekker, see the Geol. Magazine (3), vii, p. 568; by M. Schlosser, Archiv f. Anthrop., xxi, pp. 137–139.

—— 1890 C

The dogs of the American Miocene.

Princeton Coll. Bull., ii, pp. 37–39.

—— 1891 A

On the osteology of *Poëbrotherium;* a contribution to the phylogeny of the *Tylopoda.*

Jour. Morphology, v. pp. 1–78, pls. i–iii.

An abstract is given by M. Schlosser in Archiv f. Anthrop., xxii, 1894, pp. 118–120.

—— 1891 B

On the osteology of *Mesohippus* and *Leptomeryx*, with observations on the modes and factors of evolution in the *Mammalia.*

Jour. Morphology, v, pp. 301–406, with pls. xxii, xxiii.

Review in Amer. Geologist, ix, pp. 402–404; also by Schlosser in Archiv f. Anthrop., xxii, 1894, pp. 120–122.

—— 1891 C

On the mode of evolution in the *Mammalia.*

Princeton Coll. Bull., iii, pp. 62–68.

—— 1891 D

The Princeton scientific expedition of 1891.

Princeton Coll. Bull., iii, pp. 88–91.

—— 1892 A

The evolution of the premolar teeth in the mammals.

Proc. Acad. Nat. Sci. Phila.; 1892, pp. 405–444, with 8 figs. in the text.

See for abstract, Princeton Coll. Bull., iv, pp. 74–76; for review by M. Schlosser, Archiv f. Anthrop., xxiii, p. 155.

—— 1892 B

A revision of the North American *Creodonta*, with notes on some genera which have been referred to that group.

Proc. Acad. Nat. Sci. Phila., 1892, pp. 291–323.

Reviewed by M. Schlosser in Archiv f. Anthrop., xxiii, pp. 141–142.

—— 1892 C

On some of the factors in the evolution of the *Mammalia.*

Princeton Coll. Bull., iv, pp. 11–17.

Scott, W. B.—Continued. 1892 D

The genera of American *Creodonta.*

Princeton Coll. Bull., iv, pp. 76–81.

—— 1893 A

On a new musteline from the John Day Miocene.

Amer. Naturalist, xxvii, pp. 658–659.

Description of *Parictis primævus.*

—— 1893 B

The mammals of the Deep River beds.

Amer. Naturalist, xxvii, pp. 659–662.

List of species and description of new species.

—— 1893 C

The Princeton scientific expedition of 1893.

Princeton Coll. Bull., v, pp. 80–84.

—— 1894 A

A new insectivore from the White River beds.

Proc. Acad. Nat. Sci. Phila., 1894, pp. 446–448.

—— 1894 B

Notes on the osteology of *Agriochœrus* Leidy (*Artionyx* O. and W.).

Proc. Amer. Philos. Soc., xxxiii, pp. 243–251, with 3 text figs.

Notice of this paper in Amer. Naturalist, xxviii, p. 952, and xxix, p. 368; also in Archiv f. Anthrop., xxiv, p. 170. Abstract in Princeton Coll. Bull., vi, pp. 98–100, 1894.

—— 1894 C

The manus of a *Hyopotamus.*

Amer. Naturalist, xxviii, pp. 164–165.

—— 1894 D

Notes on the osteology of *Ancodus* (*Hyopotamus*).

Geol. Magazine (4), i, pp. 492–493.

—— 1894 E

The structure and relationships of *Ancodus.*

Jour. Acad. Nat. Sci. Phila., ix, pp. 461–497, pls. xxiii, xxiv, with text fig. showing restoration of the skeleton.

Appendix, p. 536, describing the new species *A. rostratus.*

Review by M. Schlosser in Archiv f. Anthrop., xxv, pp. 219–221.

—— 1894 F

The osteology of *Hyænodon.*

Jour. Acad. Nat. Sci. Phila., ix, pp. 499–535, with 10 figs. in the text.

Review by M. Schlosser in Archiv f. Anthrop., xxv, pp. 218–219.

—— 1895 A

The osteology and relations of *Protoceras.*

Jour. Morphology, xi, pp. 303–374, pls. xx–xxii.

Reviewed by M. Schlosser in Archiv f. Anthrop., xxv, pp. 217–218.

Scott, W. B.—Continued. 1895 B

A restoration of *Hyænodon.*

Geol. Magazine (4), ii, pp. 441–443, pl. xii A.

—— 1895 C

The *Mammalia* of the Deep River beds.

Trans. Amer. Philos. Soc., xviii, pp. 55–185, with pls. i–vi.

Abstract in Princeton Coll. Bull., vi, pp. 76–78, 1894. Noticed by M. Schlosser in Archiv f. Anthrop., xxiv, pp. 168–170.

This memoir, or reprints of it, appears to have been issued some time in the year 1894. The imprint "1895" is on the cover of the part containing it.

—— 1895 D

A new Geomyid from the Upper Eocene.

Amer. Naturalist, xxix, pp. 923–924.

Abstract of paper in the Proc. Nat. Sci., Phila. Acad., 1895, describing *Protoptychus hatcheri;* reviewed by M. Schlosser in Archiv f. Anthrop., xxv, p. 182.

—— 1895 E

Protoptychus hatcheri, a new rodent from the Uinta Eocene.

Proc. Acad. Nat. Sci. Phila., 1895, pp. 269–286, with 6 figs. in the text.

—— 1895 F

On the *Creodonta.*

Report Brit. Assoc. Adv. Sci., 1895, lxv., pp. 719–720.

—— 1896 A

On the osteology of *Elotherium*, Pomel.

Compte-rendu des séances du troisième Congress Internat. de Zoologie, Leyden, 1895, pp. 317–319.

—— 1896 B

Die Osteologie von *Hyracodon*, Leidy.

Festschrift zum 70sten Geburtstage von Carl Gegenbaur, ii, pp. 353–384, with pls. i–iii.

—— 1897 A

Preliminary notes on the White River *Canidæ.*

Princeton Univ. Bull., ix, pp. 1–3.

—— 1897 B

The osteology of *Hyracodon.*

Princeton Univ. Bull., ix, pp. 11–13.

—— 1898 A

The osteology of *Elotherium.*

Trans. Amer. Philos. Soc., xix, pp. 273–324, with pls. xvii, xviii.

—— 1898 B

Notes on the *Canidæ* of the White River Oligocene.

Trans. Amer. Philos. Soc., xix, pp. 327–415, with pls. xix, xx.

Scott, W. B.—Continued. 1898 C

Preliminary note on the selenodont artiodactyls of the Uinta formation.

Proc. Amer. Philos. Soc., xxxvii, pp. 73–81.

—— 1898 D

Memoir of Edward D. Cope.

Bull. Geol. Soc. America, ix, pp. 401–408.

—— 1899 A

The selenodont artiodactyls of the Uinta Eocene.

Trans. Wagner Free Inst. Sci., Phila., vi, pp. ix–xiii; 1–121, with pls. i–iv.

Note on, by H. F. Osborn in Science (2), xi, 1900 p. 115.

Scott, W. B., and **Osborn**, H. F. 1882 A

Orthocynodon, an animal related to the rhinoceros, from the Bridger Eocene.

Amer. Jour. Sci. (3), xxiv, pp. 223–225.

Reprinted in Ann. and Mag. Nat. Hist. (5), x, 1882, pp. 332–334.

—— —— 1883 A

On the skull of the Eocene rhinoceros, *Orthocynodon*, and the relation of this genus to other members of the group.

Contrib. E. M. Mus. Geol. and Arch.; Princeton Coll., Bull. No. 3, pp. 1–22, with pl. v, and 1 fig. in the text.

—— —— 1884 A

On the origin and development of the rhinoceros group.

Report Brit. Assoc. Adv. Sci., 53d meeting, Southport, 1883, p. 528.

A brief abstract.

—— —— 1887 A

Preliminary report on the vertebrate fossils of the Uinta formation, collected by the Princeton expedition of 1886.

Proc. Amer. Philos. Soc., xxiv, pp. 255–264.

Reviewed by M. Schlosser in Archiv f. Anthrop., xix, p. 97.

—— —— 1887 B

Preliminary account of the fossil mammals from the White River formation, contained in the Museum of Comparative Zoology.

Bull. Mus. Comp. Zool., xiii, pp. 151–171, with pls. i–ii, and 9 figs. in the text.

Reviewed by M. Schlosser in Archiv f. Anthrop., xix, pp. 91–96.

Scott, W. B., and **Osborn**, H. F.—Cont'd.

—— —— 1890 A

The *Mammalia* of the Uinta formation. Part I. The geological and faunal relations of the Uinta formation. Part II. The *Creodonta*, by W. B. Scott. Part III. The *Perissodactyla* by H. F. Osborn. Part IV. The evolution of the ungulate foot, by H. F. Osborn.

Trans. Amer. Philos. Soc., xvi, pp. 461–572; pls. vii–xi; text figs. 1–13.

Referred to under designations Scott, W. B., 1890 A and Osborn, H. F., 1890 D.

Author's reprints of this paper were issued Aug. 20, 1889. The imprint of Part III of the Transactions gives the date as 1890.

Reviewed by M. Schlosser in Archiv f. Anthrop., xx, pp. 128–134.

—— 1890 B

Preliminary account of the fossil mammals from the White River and Loup Fork formations contained in the Museum of Comparative Zoology. Part II. *Carnivora* and *Artiodactyla*, by W. B. Scott. *Perissodactyla*, by Henry F. Osborn.

Bull. Mus. Comp. Zool., xx, pp. 65–100, with pls. i–iii and 18 figs. in the text.

Abstract in Zoolog. Record for 1890, Mamm., p. 15. Reviewed by M. Schlosser in Archiv f. Anthrop., xx, pp. 114–116.

See also **Osborn, Scott,** and **Speir.**

Seebohm, Henry. 1889 A

An attempt to diagnose the suborders of the ancient ardeino-anserine assemblage of birds by the aid of osteological characters alone.

The Ibis (6), i, pp. 92–104.

Seeley, Harry G. 1865 A

On the pterodactyle as evidence of a new subclass of *Vertebrata* (*Saurornia*).

Report Brit. Assoc. Adv. Sci., 34th meeting, Bath, 1864, p. 69.

—— 1866 A

An epitome of the evidence that pterodactyles are not reptiles, but a new subclass of vertebrate animals allied to birds (*Saurornia*).

Ann. and Mag. Nat. Hist. (3), xvii, pp. 321–331.

—— 1870 A

Remarks on Professor Owen's monograph on *Dimorphodon*.

Ann. and Mag. Nat. Hist. (4), vi, pp. 129–152, with several text figs.

—— 1870 B

The *Ornithosauria*, an elementary study of the bones of pterodactyles, made from fossil remains found in the Cambridge upper Greensand, and arranged in the Woodwardian Museum of the University of Cambridge.

Cambridge, 1870, 8 vo., pp. i–xiii; 1–135, with pls. i–xii.

The appendix, pp. 129–132, is devoted to the bibliography of the subject.

Seeley, Harry G.—Continued. 1871 A

Note on Professor Cope's interpretation of the ichthyosaurian head.

Ann. and Mag. Nat. Hist. (4), vii, pp. 266-268: 389.

This note refers to paper by E. D. Cope. in Amer. Naturalist, October, 1870.

—— 1871 B

Note on some chelonian remains from the London Clay.

Ann. and Mag. Nat. Hist. (4), vii, pp. 227-233, with 1 fig. in the text.

Describes the new genus *Glossochelys*.

—— 1871 C

Additional evidence of the structure of the head in ornithosaurs from the Cambridge upper Greensand; being a supplement to "The *Ornithosauria*."

Ann. and Mag. Nat. Hist. (4), vii, pp. 20-36, with pls. ii, iii.

—— 1874 A

Note on the generic modifications of the plesiosaurian pectoral arch.

Quart. Jour. Geol. Soc., xxx, pp. 436-449, with 13 text figs.

—— 1876 A

On the organization of the *Ornithosauria*.

Jour. Linn. Soc. Lond., xiii, pp. 84-107, with pl. xi.

Review of this paper by "W. D." in Geol. Magazine (2), iv, 1877, p. 124.

—— 1876 B

On the British fossil Cretaceous birds.

Quart. Jour. Geol. Soc., xxxii, pp. 496-512, with pls. xxvi-xxvii.

—— 1879 A

On the *Dinosauria*.

Proc. Geologists' Assoc., vi, pp. 175-185.

—— 1880 A

Report on the mode of reproduction of certain species of *Ichthyosaurus* from the Lias of England and Würtemburg.

Report Brit. Assoc. Adv. Sci., 50th meeting, Swansea, 1880, pp. 68-76, with pl. i.

—— 1880 B

Note on *Psephophorus polygonus*, Meyer, a new type of chelonian reptile allied to the leathery turtle.

Quart. Jour. Geol. Soc., xxxvi, pp. 406-413, with pl. xv.

—— 1887 A

On *Aristosuchus pusillus* (Owen), being further notes on the fossils described by Sir R. Owen as *Poikilopleuron pusillus*.

Quart. Jour. Geol. Soc., xliii, pp. 221-228, with pl. xii.

Seeley, Harry G.—Continued. 1887 B

Mr. Dollo's notes on the dinosaurian fauna of Bernissart.

Geol. Magazine (3), iv, pp. 80-87, 124-130.

—— 1887 C

On the mode of development of the young in *Plesiosaurus*.

Geol. Magazine (3), iv, pp. 562-563.

—— 1888 A

On the mode of development of the young in *Plesiosaurus*.

Report Brit. Assoc. Adv. Sci., 57th meeting, Manchester, 1887, pp. 697-698.

—— 1888 B

The classification of the *Dinosauria*.

Report Brit. Assoc. Adv. Sci., 57th meeting, Manchester, 1887, pp. 698-699.

—— 1888 C

On *Thecospondylus daviesi* (Seeley), with some remarks on the classification of the *Dinosauria*.

Quart. Jour. Geol. Soc., xliv, pp. 79-87, with 5 text fig.

—— 1888 D

Researches on the structure, organization, and classification of the fossil *Reptilia*. II. On *Pareiasaurus bombidens* (Owen), and the significance of its affinities to amphibians, reptiles, and mammals.

Philos. Trans. Roy. Soc. Lond., clxxix, pp. 59-155, with pls. xii-xxi and 14 figs. in the text.

—— 1888 E

Researches on the structure, organization, and classification of the fossil *Reptilia*. III. On parts of the skeleton of a mammal from the Triassic rocks of Klipfontein, Fraserberg, South Africa, (*Theriodesmus phylarchus* Seeley), illustrating the reptilian inheritance in the mammalian hand.

Philos. Trans. Roy. Soc., clxxix, pp. 141-155, with pl. xxvi and 15 figs. in the text.

Reviewed by M. Schlosser in Archiv f. Anthrop,, xix, pp. 145-146.

—— 1888 F

Researches on the structure, organization, and classification of the fossil *Reptilia*. V. On associated bones of a small Anomodont reptile, *Keirognathus cordylus* (Seeley), showing the relative dimensions of the anterior parts of the skeleton and structure of the fore limb and shoulder girdle.

Philos. Trans. Roy. Soc. Lond., clxxix, B, p. 487-501, with pls. lxxv-lxxvi.

Seeley, Harry G.—Continued. 1888 G

On the classification of the fossil animals commonly named *Dinosauria*.

Proc. Roy. Soc. Lond., xliii, pp. 165-171, with 4 figs.

—— 1888 H

On the nature and limits of reptilian character in mammalian teeth.

Proc. Roy. Soc. Lond., xliv, pp. 129-141, with 8 text figs.

Reviewed by M. Schlosser in Archiv f. Anthrop., xix, p. 160.

—— 1889 A

Researches on the structure, organization, and classification of the fossil *Reptilia*. VI. On the Anomodont *Reptilia* and their allies.

Philos. Trans. Roy. Soc., Lond., clxxx, pp. 215-296, with pls. 9-25.

—— 1891 A

The ornithosaurian pelvis.

Ann. and Mag. Nat. Hist. (6), vii, pp. 237-255, with 16 figs. in the text.

—— 1891 B

On the shoulder girdle in Cretaceous *Ornithosauria*.

Ann. and Mag. Nat. Hist. (6), vii, pp. 438-445, with 2 figs. in the text.

—— 1892 A

Researches on the structure, organization, and classification of the fossil *Reptilia*. VII. Further observations on *Pareiasaurus*.

Philos. Trans. Roy. Soc., clxxxiii, pp. 311-370, with pls. xvii-xxiii and 17 figs. in the text

—— 1892 B

The nature of the shoulder girdle and clavicular arch in *Sauropterygia*.

Proc. Roy. Soc. Lond., li, pp. 119-151, with 15 figs. in the text.

—— 1893 A

On a reptilian tooth with two roots.

Ann. and Mag. Nat. Hist. (6), xii, pp. 227-230, with 1 text fig.

Refers to Marsh's account of the teeth of *Triceratops* and describes and figures the two-rooted tooth of *Nuthetes*.

—— 1894 A

On *Euskelesaurus brownii* (Huxley).

Ann. and Mag. Nat. Hist. (6), xiv, pp. 317-340, with 7 figs. in the text.

—— 1895 A

Researches on the structure, organization, and classification of the fossil *Reptilia*. Part IX, section 1. On the *Therosuchia*.

Philos. Trans. Roy. Soc. Lond., clxxxv, pt. B. pp. 987-1018, with pl. lxxxviii.

Seeley, Harry G.—Continued. 1895 B

Researches on the structure, organization, and classification of the fossil *Reptilia*. Part IX, section 5. On the skeleton in new *Cynodontia*, from the Karroo rocks.

Philos. Trans. Roy. Soc. Lond., clxxxvi, pp. 59-148, with 83 figs. in text.

—— 1895 C

On *Thecodontosaurus* and *Palæosaurus*.

Ann. and Mag. Nat. Hist. (6), xv, pp. 144-163, with 10 figs. in the text.

—— 1896 A

On a pyritous concretion from the Lias of Whitby, which appears to show the external form of the body of embryos of a species of *Plesiosaurus*.

Annual Report Yorkshire Philos. Soc. for 1895.

—— 1898 A

Origin of *Mammalia*.

Science (2), viii, pp. 357-358.

Abstract of remarks made at International Congress of Zoologists at Cambridge, England, 4th meeting; proceedings, pp. 68-71.

—— 1900 A

On an Anomodont reptile, *Aristodesmus rütimeyeri* (Wiedersheim), from the Bunter sandstone, near Basel.

Quart. Jour. Geol. Soc., lvi, pp. 620-645, with 8 figs. in the text.

Segond, L. A. 1864 A

Comparaison morphologique des vertèbres du bassin et du sternum chez les oiseaux.

Jour. de l'Anat., Physiol., etc., i, pp. 602-623.

—— 1865 A

Comparaison morphologique des vertebrès du bassin et du sternum chez les oiseaux.

Jour. de l'Anat., Physiol., etc., ii, pp. 36-56.

—— 1873 A

Reptiles et batraciens classés d'après leurs affinités par rapport à cinq types dont les caractères sont empruntés aux parties les moins modifiables du squelette.

Jour. de l'Anat., Physiol., etc., ix, pp. 1-29.

—— 1873 B

Des affinités squeletiques des poissons.

Jour. de l'Anat., Physiol., etc., ix, pp. 511-534; 607-627.

Selenka, Emil. 1869 A

Aves. Anatomischer Bau.

Bronn's Klassen und Ordnungen des Thier. Reichs, vi, pp. 1-90, pls.

This article deals with the osteology of birds.

Selwyn, Alfred R. C. 1872 A

On the discovery of reptilian footprints in Nova Scotia.

Geol. Magazine (1), ix, pp. 250–251.

Semon, Richard. 1899 A

Ueber die Entwickelung der Zahngebilde der Dipnoer.

Sitzungsber. Gesellsch. Morphol. u. Physiol. München, xv, pp. 75–85, with 4 text figs.

Serres, M. 1865 A

Deuxième note sur le squelette du *Glyptodon clavipes*.

Comptes rend. Acad. Sci. Paris, lxi, pp. 457–466.

—— 1865 B.

Note sur le *Glyptodon ornatus*. De sa carapace et de ses rapports normaux avec le squelette; caractères différentiels des os du bassin avec ceux du *Glyptodon clavipes*.

Comptes rend. Acad. Sci. Paris, lxi, pp. 537–544; 665–670.

Translation in Ann. and Mag. Nat. Hist. (3), xvi, pp. 432–443.

Shaler, N. S. 1871 A

The time of the mammoths.

Amer. Naturalist, iv, pp. 148–166.

—— 1871 B

Note on the occurrence of the remains of *Tarandus rangifer*, Gray, at Big Bone Lick, Kentucky.

Proc. Boston Soc. Nat. Hist., xiii, p. 167.

—— 1876 A

On the age of the bison in the Ohio Valley.

Mem. Kentucky Geol. Surv., i, pp. 232–236, with 1 diagrammatic section.

This paper forms Appendix II to J. A. Allen's memoir, The American Bisons, and was reprinted in Mem. Mus. Comp. Zool., iv, pp. 232–236.

Shepard, Charles Upham. 1867 A

On the supposed tadpole nests, or imprints made by *Batrachoides nidificans* (Hitchcock), in the red shale of the New Red sandstone of South Hadley, Mass.

Amer. Jour. Sci. (2), xliii, pp. 99–104.

Sherborn, C. D.

See **Woodward,** A. S., and **Sherborn,** C. D.

Shufeldt, R. W. 1881 A

On the ossicle of the antibrachium as found in some North American *Falconidæ*.

Bull. Nuttall Ornithological Club, vi. pp. 197–203.

Shufeldt, R. W.—Continued. 1881 B

Osteology of the North American *Tetraonidæ*.

Bull. U. S. Geol. and Geog. Surv., F. V. Hayden, vi, pp. 309–350, with pls. vii–xiv.

Also, with little change in Ann. Rep. U. S. Geol. and Geog. Surv. for 1878 (1883), pp. 653–700, with pls. v–xiii, and 16 figs. in the text.

—— 1881 C

Osteology of *Lanius ludovicianus excubiterides*.

Bull. U. S. Geol. and Geog. Surv., F. V. Hayden, vi, pp. 351–359, with pl. xiv.

Also, in Ann. Rep. U. S. Geol. and Geog. Surv. for 1878 (1883), pp. 719–725, with pl. xiv.

—— 1881 D

Osteology of *Speotyto cunicularia*, var. *hypogæa*.

Bull. U. S. Geol. and Geog. Surv., F. V. Hayden, vi, pp. 87–117, with pls. i–iii.

Also, with little change, in Annual Report U. S. Geol. and Geog. Surv. for 1878 (1883), pt. i, pp. 593–620, with pls. i–iii.

—— 1881 E

Osteology of *Eremophila alpestris*.

Bull. U. S. Geol. and Geog. Surv., F. V. Hayden, vi, pp. 119–147, with pl. iii–iv.

Also in Annual Report U. S. Geol. and Geog. Surv. for 1878 (1883), pp. 627–650, with pl. iv.

—— 1883 A

Observations upon the osteology of *Podasocys montanus*.

Jour. Anat. and Physiol., xviii, pp. 86–102, with pl. v.

—— 1883 B

Remarks on the osteology of *Phalacrocorax bicristatus*.

Science, ii, pp. 640–642, with 3 figs.

For discussion of this paper see Jeffries, J. A., Science, ii, p. 739, and iii, p. 59.

—— 1883 C

Osteology of the *Cathartidæ*.

Twelfth Annual Report U. S. Geol. and Geog. Surv., F. V. Hayden, 1878 (1883), Pt. i, pp. 728–786, with pls. xv–xxiv, and many figs. in the text.

—— 1884 A

Osteology of *Numenius longirostris*, with notes upon the skeleton of other American *Limicolæ*.

Jour. Anat. and Physiol., xix, pp. 51–82, with pls. iv and v.

—— 1885 A

Contribution to the comparative osteology of the *Trochilidæ*, *Caprimulgidæ*, and *Cypselidæ*.

Proc. Zool. Soc. Lond., 1885, pp. 886–915, with pls. lviii–lxi and 6 woodcuts in the text.

Shufeldt, R. W.—Continued. 1885 B

The osteology of *Amia calva*, including certain special references to the skeleton of Teleosteans.

Report U. S. Commissioner of Fish and Fisheries, 1883, pp. 747–878, pls. i-xiv.

Part I consists of a translation of Sagemehl's paper on *Amia*. Part II describes osteology of *Amia*, and portions of that of *Micropterus* and *Albula*.

—— 1886 A

Additional notes upon the anatomy of the *Trochilidæ*, *Caprimulgidæ*, and *Cypselidæ*.

Proc. Zool. Soc. Lond., 1886, pp. 501–503, with 6 figs. in the text.

—— 1886 B

Contributions to the anatomy of *Geococcyx californianus*.

Proc. Zool. Soc. Lond., 1886, pp. 466–491, with pls. xlii-xlv.

—— 1886 C

Osteology of *Conurus carolinensis*.

Jour. Anat. and Physiol., xx, pp. 407–425, with pls. x and xi.

—— 1888 A

Contributions to the comparative osteology of arctic and subarctic water birds.

Jour. Anat. and Physiol., xxiii, pp. 1–39, pls. i-v.

—— 1888 B

Osteology of *Porzana carolina* (the Carolina rail).

Jour. Compar. Med. and Surg., ix, pp. 231–248, with 7 figs. in the text.

—— 1888 C

Observations upon the morphology of *Gallus bankiva* of India.

Jour. Compar. Med. and Surg., ix, pp. 343–376, with 30 figs. in the text.

—— 1888 D

On the skeleton in the genus *Sturnella*, with osteological notes upon other North American *Icteridæ* and the *Corvidæ*.

Jour. Anat. and Physiol., xxii, pp. 309–350, with pls. xiv, xv.

—— 1888 E

Observations upon the osteology of the order *Tubinares* and *Steganopodes*.

Proc. U. S. Nat. Mus., xi, pp. 253–315, with 43 figs. in the text.

—— 1889 A

Observations upon the osteology of the North American *Anseres*.

Proc. U. S. Nat. Mus., xi, pp. 215–251, with 30 figs. in the text.

Shufeldt, R. W.—Continued. 1889 B

On the comparative osteology of arctic and subarctic water birds.

Jour. Anat. and Physiol., xxiii, pp. 165–186, pls. vii-xi; 400–427, text figs. 17; 537–558, text figs. 1–8.

This paper is a continuation of Shufeldt, 1888 A.

—— 1889 C

Contributions to the comparative osteology of arctic and subarctic water birds.

Jour. Anat. and Physiol., xxiv, pp. 89–117, pls. vi-viii, and 13 figs. in the text.

A continuation of Shufeldt, 1889 B. Treats of *Fraterculinæ*, *Fratercola*, *Lunda*, *Uria*, and the *Alcidæ*.

—— 1890 A

Contributions to the comparative osteology of arctic and subarctic water birds.

Jour. Anat. and Physiol., xxiv, pp. 169–187, pls. xi, xii, and 2 text figs.; 543–566, with 17 text figs.

—— 1890 B

Contributions to the comparative osteology of arctic and subarctic water birds.

Jour. Anat. and Physiol., xxv, pp. 60–77.

A continuation of Shufeldt, 1890 A.

—— 1890 C

On the affinities of *Hesperornis*.

Nature, xliii, p. 176.

—— 1891 A

On a collection of fossil birds from the Equus beds of Oregon.

Amer. Naturalist, xxv, pp. 359–362.

A general account of Silver Lake, Oregon, and of fossil remains there found.

—— 1891 B

Fossil birds from the Equus beds of Oregon.

Amer. Naturalist, xxv, pp. 818–821.

See also The Auk, 1891, viii, pp. 365–368.

A list of 51 species, with remarks on some of the most interesting.

—— 1891 C

Contributions to the comparative osteology of arctic and subarctic water birds.

Jour. Anat. and Physiol., xxv, pp. 509–525, pls. xi and xii, with 4 figs. in the text.

Continuation and conclusion of Shufeldt, 1890 B.

—— 1892 A

A study of the fossil avifauna of the Silver Lake region, Oregon.

Proc. Amer. Assoc. Adv. Sci. 40th meeting Washington, 1891, p. 286. Abstract.

Shufeldt, R. W.—Continued. 1892 B

Creccoides osbornii.

In Cope's report on palæontology of Texas, 3d Annual Report Geol. Surv. Texas, for 1891. Austin, 1892, pp. 253–255.

—— 1892 C

Concerning the taxonomy of the North American *Pygopodes*, based upon their osteology.

Jour. Anat. and Physiol., xxvi, pp. 199–203.

—— 1892 D

A study of the avifauna of the Equus beds of the Oregon Desert.

Jour. Acad. Nat. Sci., Phila., ix, pp. 389–425, pls. xv–xvii.

—— 1893 A

Comparative osteological notes on the extinct bird *Ichthyornis*.

Jour. Anat. and Physiol., xxvii, pp. 336–342.

—— 1894 A

Osteology of certain cranes, rails, and their allies, with remarks upon their affinities.

Jour. Anat. and Physiol., xxix, pp. 21–34, with 3 figs.

—— 1894 B

On cases of complete fibulæ in existing birds.

The Ibis (6), vi, pp. 361–366, with 2 figs. in the text.

—— 1894 C

Notes on the *Steganopodes* and on fossil birds' eggs.

The Auk, xi, pp. 337–339.

—— 1894 D

On the affinities of the *Steganopodes*.

Proc. Zool. Soc. Lond., 1894, pp. 160–162.

—— 1897 A

On fossil bird bones obtained by expeditions of the University of Pennsylvania from the bone caves of Tennessee.

Amer. Naturalist, xxxi, pp. 645–650.

All are of existing species and yet living in that region.

—— 1897 B

On the feathers of "*Hesperornis*."

Nature, lvi, p. 30.

—— 1899 A

Observations on the classification of birds.

Ann. and Mag. Nat. Hist. (7), iv, pp. 101–111, with 2 figs. in the text.

—— 1900 A

The osteology of *Vulpes macrotis*.

Jour. Acad. Nat. Sci. Phila. (2), xi, pp. 395–418, with pls. xxii, xxiii.

Shurtleff, N. B. 1846 A

Remarks on the skeleton of *Mastodon giganteus* found in Newburg, Orange County, N. Y.

Proc. Boston Soc. Nat. Hist., ii, pp. 96–98.

Sickler, F. K. L. 1835 A

Fährten unbekannten Thiere im Sandsteine bei Hildburghausen.

Neues Jahrb. Mineral., etc., 1835, pp. 230–232.

This is followed by remarks on the fossil tracks by H. G. Bronn.

Siebenrock, Friedrich. 1892 A

Zur Kenntniss des Kopfskelettes der Scincoiden, Anguiden, und Gerrhosauriden.

Annalen k. k. naturh. Hofmuseums Wien, vii, pp. 163–195, with pls. xi, xii.

—— 1893 A

Das Skelet von *Uroplates fimbriatus* Schneid.

Annalen k. k. naturh. Hofmuseums Wien, viii, pp. 517–536, with pl. xiv and 2 figs. in the text.

—— 1893 B

Das Skelet von *Brookesia superciliaris* Kuhl.

Sitzungsber. k. p. Akad. Wissensch. Wien, math.-naturw. Cl., cii, pp. 1–48, with pls. i–iv.

—— 1894 A

Das Skelet der *Lacerta simonyi*, und der Lacertidenfamilie überhaupt.

Sitzungsber. k. p. Akad. Wissensch. Wien, math. naturw. Cl., ciii, pp. 205–292, pls. i–iv.

—— 1894 B

A contribution to the osteology of the head of *Hatteria*.

Ann. and Mag. Nat. Hist. (6), xiii, pp. 297–311, with pl. xiv.

Translated from Sitzungsber. k. p. Akad. Wissensch. Wien, math. naturw. Cl., cii, Abth. i, 1893, pp. 250–268, pl. i.

—— 1895 A

Zu Kenntniss des Rumpfskeletes der Scincoiden, Anguiden und Gerrhosauriden.

Annalen k. k. naturh. Hofmuseums Wien, x, pp. 18–41, with pl. iii and 4 figs. in the text.

Appended is a list of 59 books and papers bearing on the osteology of the *Lacertilia*.

—— 1895 B

Das Skelet der *Agamidæ*.

Sitzungsber. k. p. Akad. Wissensch. Wien, math.-naturw. Cl., Abth. i, civ, pp. 1–108, with pls. i–vi.

This work includes a list of 67 papers on the subject treated.

Siebenrock, Friedrich—Cont'd. 1897 A

Das Kopfskelet der Schildkröten.

Sitzungsber. k. p. Akad. Wissensch. Wien., math.-naturw. Cl., cvi, pp. 1-84, with pls. i-vi.

This paper includes a list of 61 works on the subject.

—— 1898 A

Ueber den Bau und die Entwicklung des Zungenbein-Apparates der Schildkröten.

Annalen k. k. naturh. Hofmuseums Wien, xiii, pp. 424-436, with pls. xvii, xviii and 2 figs. in the text.

Appended is a list of 22 works bearing on the subject.

Silliman, Benj., Sr. 1835 A

Vertebral bone of a mastodon.

Amer. Jour. Sci., xxvii, p. 165.

—— 1837 A

Bird tracks at Middletown, Conn., in the New Red sandstone.

Amer. Jour. Sci., xxxi, p. 165.

This is an extract from a letter to the editor from an unnamed correspondent. No species or genera are named.

Silliman, Benj., Jr. 1868 A

On the existence of the mastodon in the deep-lying gold placers of California.

Amer. Jour. Sci. (2), xlv, pp. 378-381.

Sirodot, S. 1876 A

Les éléphants du mont Dol; essai d'organogénie du système des dents mâchelières du mammouth.

Comptes rend. Acad. Sci., Paris, lxxxii, pp. 734-736, 822-824, 902-905.

—— 1876 B

Les éléphants du mont Dol. Dentition du mammouth, distinction des molaires inférieure, et supérieurs droits et gauches.

Comptes rend. Acad. Sci., Paris, lxxxii, pp. 1065-1068.

Sismonda, Eugenio. 1849 A

Descrizione dei pesci e dei crostacei fossili nel Piemonte.

Mem. della Reale Accad. delle Scienze di Torino (2), x, pp. 1-88, with pls. i-iii.

Sixta, V. 1900 A

Vergleichend - osteologische Untersuchungen über den Bau des Schädels von Monotremen und Reptilien.

Zoolog. Anzeiger, xxiii, pp. 213-229.

See also J. F. Van Bemmelen in Zoolog. Anzeiger, xxiii, p. 449.

Skilton, Dr. 1858 A

Communication upon *Equus major* found near Troy, N. Y.

Proc. Boston Soc. Nat. Hist., vi, pp. 303-304.

Slade, D. D. 1888 A

On certain vacuities or deficiencies in the crania of mammals.

Bull. Mus. Comp. Zool., xiii, pp. 241-246, with pls. i and ii.

—— 1890 A

Osteological notes.

Science, xvi, pp. 332-333.

Treats of jugal arch of *Mammalia*.

—— 1891 A

Osteological notes.

Science, xvii, pp. 317-318.

Treats of the jugal arch of the *Primates*.

—— 1891 B

Osteological notes.

Science, xviii, pp. 53-54.

Treats of jugal arch of *Primates*.

—— 1892 A

Osteological notes.

Science, xix, pp. 203-204.

Jugal arch of *Insectivora*.

—— 1892 B

Osteological notes.

Science, xx, p. 46.

Discusses jugal arch of the *Rodentia*.

—— 1893 A

Osteological notes.

Science, xxi, pp. 78-79.

Discusses jugal arch of the *Ungulata*.

Smith, Horace P. 1887 A

Bison latifrons. Leidy.

Jour. Cincinnati Soc. Nat. Hist., x, pp. 19-24, pl. i.

Smith, J. 1895 A

Notes on a peculiarity in the form of the mammalian tooth.

Proc. Roy. Soc. Edinburgh, xx, pp. 336-346, with 1 page of 13 figs.

Smith, J. Augustine. 1846 A

Central cavity of the mastodon.

Amer. Quart. Jour. Agricult. and Sci., iii, pp. 19-22.

The word "central" in the caption of this paper is probably a misprint for cerebral.

Smith, J. Lawrence. 1844 A

Communication on some fossil bones.

Amer. Jour. Sci. (1), xlvii, pp. 116-117.

On some bones from vicinity of Charleston, S. C. Species undetermined.

Snow, F. H. 1878 A

On the dermal covering of a mosasauroid reptile.

Trans. Kansas Acad. Sci., vi, pp. 54-58, with 1 pl. and 1 text-fig.

Snow, F. H.—Continued. 1887 A

On the discovery of a fossil bird track in the Dakota sandstone.

Trans. Kansas Acad. Sci., x, pp. 3–6, with 1 fig. in the text.

Regarded as possibly tracks of *Ichthyornis*.

Sollas, W. J. 1881 A

On a new species of *Plesiosaurus* (*P. conybeari*) from the lower Lias of Charmouth, with observations on *P. megacephalus* Stutchbury and *P. brachycephalus* Owen.

Quart. Jour. Geol. Soc., xxxvii, pp. 440–481, with pls. xxiii and xxiv and 14 woodcuts.

Speir, Francis.

See **Osborn, Scott,** and **Speir; Osborn** and **Speir.**

Stainier, X. 1894 A

Un *Spiraxis* nouveau du Dévonien belge.

Bull. Soc. Belge Géol., Paléont., Hydrol., viii, Mém., pp. 23–28, with 1 text fig.

Stannius, H. 1842 A

Ueber das Gebiss des Lama.

Archiv Anat. Physiol. u. wissensch. Med., Jahrg. 1842, pp. 388–389.

—— 1842 B

Ueber Gebiss und Schädel des Wallrosses unter Berücksichtigung der Frage, ob die Verschiedenheiten im Baue des Schädels zur Unterscheidung mehrerer Arten der Gattung *Trichechus* berechtigen.

Archiv Anat. Physiol. u. wissensch. Med., 1842, pp. 390–413.

—— 1846 A

Bemerkungen über das Verhältniss der Ganoïden zu den Clupeïden, insbesondere zu *Butirinus*.

Rostock, 1846, 8vo, pp. 1–20.

—— 1854 A

Handbuch der Zootomie von Siebold und Stannius. Zweiter Theil. Die Wirbelthiere von Hermann Stannius. Erstes Buch. Die Fische.

Zweite Auflage, Berlin, 1854. Pp. 1–279.

—— 1856 A

Handbuch der Zootomie von Siebold und Stannius. Zweiter Theil. Wirbelthiere von Hermann Stannius. Zweites Buch. Zootomie der Amphibien.

Zweite Auflage, Berlin, 1856. Pp. 1–271.

Starks, Edwin Chapin. 1899 A

The osteological characters of the fishes of the suborder *Percesoces*.

Proc. U. S. Nat. Mus., xxii, pp. 1–10, with pls. i–iii.

The osteology of *Atherinopsis californiensis*, *Mugil cephalus*, and *Sphyræna argentea* is described and illustrated.

Stecker, Anton. 1877 A

Zur Kenntniss des Carpus und Tarsus bei *Chamæleon*.

Sitzungsber. k. p. Akad. Wissensch. Wien. mat.-naturw. Cl., lxxv, pt. i, pp. 7–16, with pls. i, ii.

Steenstrup, Jap. 1855 A

Et Bidrag til Geirfuglens, *Alca impennis* Lin., Naturhistorie, og særligt til Kundshaben om dens tidligere Udbredningskreds.

Videnskb. Meddel. naturh. Forening Kjöbenhavn, 1855, pp. 33–118, with 1 map and 1 pl.

Stehlin, H. G. 1893 A

Zur Kenntniss der postembryonalen Schädelmetamorphosen bei Wiederkauern. Inauguraldissertation, Basel.

4to, Basel, 1893, pp. 1–81, with pls. i–iv.

—— 1899 A

Ueber die Geschichte des Suiden-Gebisses. Erster Theil.

Abhandl. schweizer. paläontolog. Gesellsch., xxvi, pp. i–vii; 1–336.

Steinmann, Gustav, und **Döderlein**, Ludwig. 1890 A

Elemente der Paläontologie.

Pp. i–xix; 1–848 with 1,030 figs. in the text. Leipzig, Wilhelm Engelmann.

Pp. 516–827 treat on the *Vertebrata*.

Steitz, Auguste. 1870 A

[Exhibition of molar tooth of *Elephas primigenius* from Helena, Montana.]

Trans. Acad. Sci. St. Louis, iii, p. xxxii.

Stejneger, Leonhard. 1883 A

Contributions to the natural history of the Commander Islands. No. 1. Notes on the natural history, including descriptions of new cetaceans.

Proc. U. S. Nat. Mus., vi, pp. 58–89.

Contains an account of Steller's sea-cow (*Rytina gigas*) and measurements of skulls establishing the existence of differences in the skulls of the two sexes.

—— 1884 A

Contributions to the natural history of the Commander Islands. No. 2.

Stejneger, Leonhard—Continued.

Investigations relating to the date of the extermination of Steller's sea-cow.

Proc. U. S. Nat. Mus., vii, pp. 181-189.

—— 1885 A

Natural history of birds.

The Standard Natural History, edited by John Sterling Kingsley, vol. iv, pp. 1-195, with figs. 1-93; 368-441, with figs. 171-221; 458-547, with figs. 228-273.

—— 1886 A

On the extermination of the great northern sea-cow.

Jour. Amer. Geog. Soc., New York, xviii, pp. 317-323.

—— 1887 A

How the great northern sea-cow (*Rytina*) became exterminated.

Amer. Naturalist, xxi, pp. 1047-1054.

—— 1893 A

Skeletons of Steller's sea-cow preserved in the various museums.

Science, xxi, p. 81.

Stejneger, L., and **Lucas,** F. A. 1890 A

Contributions to the natural history of the Commander Islands. A.—Contributions to the history of Pallas's cormorant.

Proc. U. S. Nat. Mus., xii, pp. 83-94, with pls. ii-iv.

Steller, Georg Wilhelm. 1751 A

De bestiis marinis.

Novi Commentarii Acad. Scient. Imp. Petropolitanæ, ii, pp. 289-398.

The earliest account of the arctic sea-cow, containing descriptions of its anatomy, habits, etc. The portion of this work devoted to the sea-cow includes pp. 294-300, with pl. xiv.

Stephan, Pierre. 1900 A

Recherches histologiques sur la structure du tissue osseux des poissons.

Bull. Scient. France et Belgique, xxxiii, pp. 281-429, with pls. i-iii.

With a bibliographical index of 140 entries.

Sternberg, Charles. 1899 A

The first great roof.

Popular Science, xxxiii, pp. 126-127, with 1 text fig.

Describes the carapace of *Protostega gigas*.

Stevenson, W. D. 1884 A

The "man-eater shark," *Carcharodon carcharias*.

Amer. Naturalist, xviii, pp. 940-941, with 1 pl. and 1 woodcut.

Stewart, Alban. 1897 A

Restoration of *Oreodon culbertsonii*, Leidy.

Kansas Univ. Quarterly, vi, pp. 13-14, with pl. i.

Stewart, Alban—Continued. 1897 B

Notes on the osteology of *Bison antiquus*.

Kansas Univ. Quarterly, vi, pp. 127-135, with pl. xvii and 1 fig. in the text.

The species here described as *B. antiquus* is now assigned to *B. occidentalis* Lucas.

—— 1898 A

A contribution to the knowledge of the ichthyic fauna of the Kansas Cretaceous.

Kansas Univ. Quarterly, vii, pp. 21-29, with pls. i and ii.

—— 1898 B

Individual variations in the genus *Xiphactinus* Leidy.

Kansas Univ. Quarterly, vii, A, pp. 115-119, with pls. vii-x.

—— 1898 C

Some notes on the genus *Saurodon* and allied species.

Kansas Univ. Quarterly, vii, A, pp. 177-186, with pls. xiv-xvi.

—— 1898 D

A preliminary description of seven new species of fish from the Cretaceous of Kansas.

Kansas Univ. Quarterly, vii, A, pp. 191-196, with pl. xvii and text figs. 1-3.

—— 1899 A

A preliminary description of the opercular and other cranial bones of *Xiphactinus* Leidy.

Kansas Univ. Quarterly, viii, A, pp. 19-21.

—— 1899 B

Pachyrhizodus minimus, a new species of fish from the Cretaceous of Kansas.

Kansas Univ. Quarterly, viii, A, pp. 37-38, with 1 fig. in the text.

—— 1899 C

Notice of three new Cretaceous fishes, with remarks on the *Saurodontidæ* Cope.

Kansas Univ. Quarterly, viii, A, pp. 107-112.

—— 1899 D

Notes on the osteology of *Anogmius polymicrodus* Stewart.

Kansas Univ. Quarterly, viii, A, pp. 117-121, with pl. xxxi.

—— 1899 E

Leptichthys, a new genus of fishes from the Cretaceous of Kansas.

Amer. Geologist, xxiv, pp. 78-79.

—— 1900 A

Teleosts of the Upper Cretaceous.

Univ. Geol. Surv., Kansas, vi, pp. 257-403, with pls. xxxiii-lxxiii, and 6 figs. in the text.

Stewart, Thos. P. 1828 A

Mammoth.

Amer. Jour. Sci. (1), xiv, pp. 188-189.

Stickler, L. 1899 A

Ueber den microscopischen Bau der Faltenzähne von *Eryops megacephalus* Cope.

Palæontographica, xlvi, pp. 85-94, with pls. xi, xii.

Stirrup, Mark. 1893 A

The true horizon of the mammoth.

Geol. Magazine (3), x, pp. 107-111.

—— 1894 A

The true horizon of the mammoth.

Geol. Magazine (4), i, pp. 80-82.

Stock, Thos. 1881 A

On some British specimens of the "Kammplatten" or "Kammleisten" of Professor Fritsch.

Ann. and Mag. Nat. Hist. (5), viii, pp. 90-95, with pl. vi.

—— 1881 B

On the discovery of a nearly entire *Rhizodus* in the Wardie shales.

Geol. Magazine (2), viii, pp. 77-78.

—— 1882 A

Further observations on Kammplatten, and note on *Ctenoptychius pectinatus.*

Ann. and Mag. Nat. Hist. (5), ix, pp. 253-257, with pl. viii.

—— 1882 B

Notice of some discoveries recently made in Carboniferous vertebrate palæontology.

Nature, xxvii, p. 22.

Records finding of "*Diplodus*" teeth with spines quite different from those of *Pleuracanthus.* Also *Tristychius* associated with *Hybodus.*

—— 1883 A

On the structure and affinities of the genus *Tristychius* Agass.

Ann. and Mag. Nat. Hist. (5), xii, pp. 177-190, with pl. vii.

Strauch, Alexander. 1890 A

Bemerkungen über die Schildkrötensammlung im Zoologischen Museum der K. Akademie der Wissenschaften zu St. Petersburg.

Mém. Acad. Imp. Sci. St. Pétersbourg (7), xxxviii, No. 2, pp. 1-43.

Struckmann, C. 1880 A

Ueber die Verbreitung des Renthiers in der Gegenwart und in älterer Zeit nach Maasgabe seiner fossilen Reste unter besonderer Berücksichtigung der deutschen Fundorte.

Zeitschr. deutsch. geol. Gesellsch., xxxii, pp. 728-773.

Strüver, Johannes. 1864 A

Die fossilen Fische aus dem Keupersandstein von Coburg.

Zeitschr. deutsch. geol. Gesellsch., xvi, pp. 303-330, with pl. xiii.

Contains discussion of *Semionotus* and *Dictyopyge.*

Struthers, John. 1871 A

On some points in the anatomy of a great fin-whale (*Balænoptera musculus*).

Jour. Anat. and Physiol., i, pp. 107-125.

Discusses the rudimentary hind limbs, the pelvic bones, ribs, sternum, and cervical vertebræ.

—— 1872 A

On the cervical vertebræ and their articulations in fin-whales.

Jour. Anat. and Physiol., vii, pp. 1-55, pls. i, ii.

—— 1881 A

On the bones, articulations, and muscles of the rudimentary hind limbs of the Greenland right-whale (*Balæna mysticetus*).

Jour. Anat. and Physiol., xv, pp. 141-176, 301-321, pls. xiv-xvii.

—— 1885 A

On the rudimentary hind limb of *Megaptera longimana.*

Amer. Naturalist, xix, pp. 124-125.

Abstract of paper read at Montreal before Brit. Assoc. Adv. Sci., 1884.

—— 1885 B

On the development of the foot of the horse.

Nature, xxxii, pp. 560-561.

A short note.

—— 1888 A

On some points in the anatomy of a *Megaptera longimana.*

Jour. Anat. and Physiol., xxii, pp. 240-282, 441-460, 629-654, pls. x-xii; xxiii, pp. 124-163, pl. vi; 308-335, 358-373.

The last two installments of this paper belong to the year 1889. The first installment, not above cited, is found in vol. xxiii, pp. 109-124, and deals with the soft portions of the anatomy.

—— 1893 A

On the rudimentary hind limb of a great fin-whale (*Balænoptera musculus*) in comparison with those of the hump-

Struthers, John—Continued.

back whale and the Greenland right-whale.

Jour. Anat. and Phys., vol. xxvii, with pls. xvii–xx.

—— 1893 B

On the development of the bones of the foot of the horse, and of digital bones generally; and on a case of polydactyly in the horse.

Jour. Anat. and Physiol., xxvii, pp. 51–62, with pl. 1.

—— 1895 A

Carpus of the Greenland right-whale (*Balæna mysticetus*) and of fin-whales.

Jour. Anat. and Physiol., xxix, pp. 145–187, with pls. ii–iv.

Stutchbury, S.

See **Riley** and **Stutchbury**.

Swallow, G. C. 1866 A

Notice of remains of the horse in the altered drift of Kansas.

Trans. Acad. Sci. St. Louis, ii, p. 418.

The species not distinguishable by the writer from the common horse.

Swinnerton, H. H.

See **Howes** and **Swinnerton**.

T. R. D. 1839 A

Fossil shells and bones (*Megatherium*) near Savannah, Ga.

Amer. Jour. Sci., i, 1839, p. 380.

T. R. J. 1889 A

Human relics and bones of mastodon found in association.

Geol. Magazine (3), vi, p. 192.

Said to have been found in Attica, Wyoming County, N. Y.

Taeker, Julius. 1892 A

Zur Kenntniss der Odontogenese bei Ungulaten.

Pp. 27, with 4 pls. Dorpat, 1892.

Teller, Friedrich. 1884 A

Neue Anthracotherienreste aus Südsteiermark und Dalmatien.

Beiträge Palæontologie Osterreich-Ungarns und des Orients (Mojsisovics und Neumayer), iv, pp. 45–134, with pls. xi–xiv.

On pages 47, 48 is a list of papers which treat of the genus *Anthracotherium*.

—— 1891 A

Ueber den Schädel eines fossilen Dipnoërs, *Ceratodus sturii*, nov. spec., aus den Schichten der oberen Trias der Nordalpen.

Abhandl. k. k. geol. Reichsanstalt Wien., xv, Heft 3, pp. 1–39, with pls. i–iv.

On pp 4–5 is found a long list of works on the genus *Ceratodus*.

Thacher, James K. 1877 A

Median and paired fins, a contribution to the history of vertebrate limbs.

Trans. Connecticut Acad. Arts and Sci., iii, pp. 281–310, pls. xlix–lx.

—— 1887 B

Ventral fins of ganoids.

Trans. Connecticut Acad. Arts and Sci., iv, pp. 233–242, pls. i, ii.

Thévenin, Armand. 1896 A

Mosasauriens de la craie grise de Vaux-Éclusier près Péronne (Somme).

Bull. Soc. Géol. France (3), xvii, pp. 900–911, with pls. xxix, xxx, and 8 figs. in the text.

—— 1896 B

Nouveaux mosasauriens trouvés en France.

Comptes rend. Acad. Sci. Paris, cxxiii, pp. 1319–1320.

Thilenius, G. 1894 A

Ueber Sesambeine fossiler Säugetiere.

Anatom. Anzeiger, x, pp. 42–48, with 2 figs.

Thomas, Oldfield. 1888 A

On the homologies and succession of the teeth in the *Dasyuridæ*, with an attempt to trace the history of the evolution of mammalian teeth in general.

Philos. Trans. Roy. Soc. Lond., clxxviii, pp. 443–462; pls. 27, 28.

Reviewed by M. Schlosser in Archiv f. Anthrop., xix, pp. 115–116.

—— 1888 B

On a new and interesting annectant genus of *Muridæ*, with remarks on the relations of the Old and New-World members of the family.

Proc. Zool. Soc. Lond., 1888, pp. 130–135, with pl. v.

—— 1890 A

Remarks on Dr. Schosser's "Ueber die Deutung des Milchgebisses der Säugetiere."

Biolog. Centralbl., x, pp. 216–219.

—— 1892 A

On the species of *Hyracoidea*.

Proc. Zool. Soc. Lond., 1892, pp. 50–76, with pl. iii.

—— 1892 B

Notes on Dr. W. Kükenthal's discoveries in mammalian dentition.

Ann. and Mag. Nat. Hist. (6), ix, pp. 308–313.

—— 1896 A

On the genera of rodents; an attempt to bring up to date the current arrangement of the order.

Proc. Zool. Soc. Lond., 1896, pp. 1012–1028.

See for remarks on this paper Dr. T. S. Palmer in Science, vi, p. 108.

Thomas, O., and **Lydekker**, R. 1897 A
On the number of grinding teeth possessed by the manatee.
Proc. Zool. Soc. Lond., 1897, pp. 595–600, with pl. xxxvi.

Thompson, D'Arcy W. 1886 A
On the hind limb of *Ichthyosaurus*, and on the morphology of vertebrate limbs.
Jour. Anat. and Physiol., xx, pp. 532–535, with 2 text figs.

—— 1890 A
On the systematic position of *Zeuglodon*.
Studies from the Museum of Zoology, University Coll., Dundee, No. 9, pp. 1–8, with 10 text figs.

—— 1890 B
On the systematic position of *Hesperornis*.
Studies from the Museum of Zoology, University Coll., Dundee, No. 10, pp. 1–15, with 17 text figs.

Thompson, James. 1868 A
Note on the spines of *Gyracanthus*.
Trans. Geol. Soc. Glasgow, iii, pp. 130–133.

—— 1870 A
On teeth and dermal structure associated with *Ctenacanthus*.
Report Brit. Assoc. Adv. Sci., 39th meeting, Exeter, 1869, pp. 102–103.
Regards *Ctenacanthus*, *Cladodus*, and *Diplodus* as representing one form.

—— 1871 A
On *Ctenacanthus hybodoides*, Egerton.
Trans. Geol. Soc. Glasgow, iv, pp. 59–62, with pls. ii, iii.

Thompson, J. Arthur. 1897 A
As regards dentitions—a notice of some new facts and theories.
Proc. Scottish Micros. Soc., ii, pp. 36–50.

Thompson, Zadock. 1850 A
An account of some fossil bones found in Vermont in making excavations for the Rutland and Burlington Railroad.
Amer. Jour. Sci. (2), ix, pp. 256–263, with 2 pages of cuts, 13 in number.

—— 1853 A
History of Vermont, natural, civil, and statistical.
Appendix, pp. 5–64.
Contains description and figures of *Beluga vermontana* and an account of the finding of some remains of *Elephas primogenius?*.

Thompson, Zadock—Continued. 1859 A
A Vermont whale.
Edinb. New Philos. Jour., x, p. 299.
Records finding of *Beluga vermontana* at Charlotte, Vt., in 1849.

Tims, H. W. Marett. 1896 A
Notes on the dentition of the dog.
Anatom. Anzeiger, xi, pp. 537–546, with 5 figs.
Contains a list of papers written on the subject discussed, the teeth of mammals, with especial reference to the existence of "pre-milk" teeth.

—— 1896 B
On the tooth-genesis in the *Canidæ*.
Jour. Linn. Soc. Lond., Zool., xxv, pp. 445–480, with 8 figs. in the text.
Contains numerous references to the literature.

Todd, Albert. 1876 A
[Exhibition of tooth identified as that of *Mastodon angustidens*, found in Pike County, Mo.]
Trans. Acad. Sci. St. Louis, iii, p. cxcii.

Toll, Eduard. 1895 A
Die fossilen Eislager und ihre Beziehungen zu den Mammuthleichen.
Mém. Acad. Imp. Sci. St. Pétersbourg (7), xlii, No. 13, pp. 1–86, with pls. i–vii.

Tomes, Charles S. 1898 A
A manual of dental anatomy, human and comparative.
Fifth edition, 8vo, Philadelphia, 1898, pp. i–viii; 1–596, with figs. 1–273.

Tomes, John. 1850 A
On the structure of the dental tissues of the order *Rodentia*.
Philos. Trans. Roy. Soc. Lond., 1850, pp. 529–567, with pls. xliii–xlvi.

Topinard, Paul. 1892 A
De l'évolution des molaires et prémolaires chez les Primates et en particulier chez l'homme.
L'Anthropologie, Paris, 1892, pp. 641–710, with 8 figs.
Reviewed by M. Schlosser in Archiv f. Anthrop., xxiii, pp. 157–159.

Tornier, Gustav. 1886 A
Fortbildung und Umbildung des Ellbogengelenks während der Phylogenesis der einzelnen Säugethiergruppen.
Morpholog. Jahrbuch, xii, pp. 407–413, with 2 woodcuts.

—— 1888 A
Die Phylogenese des terminalen Segmentes der Säugethier-Hintergliedmassen.

Tornier, Gustav—Continued.

Morpholog. Jahrbuch, xiv, pp. 223-328, with pls. xi, xii.

"Die Begriffe, 'Fuss,' und 'terminales Segment der hinteren Gliedmassen' werden von mir als gleichwerthig angesehen."

—— 1890 A

Die Phylogenese des terminalen Segmentes der Säugethier-Hintergliedmassen.

Morpholog. Jahrbuch, xvi, pp. 401-483, with pls. xvii, xviii.

Toula, Franz. 1892 A

Zwei neue Säugethierfundorte auf der Balkanhalbinsel.

Sitzungsber. Cl. k. Akad. Wissensch. Wien. math.-naturw. ci, Abth. i, pp. 608-615, with plate.

Describes *Menodus ? rumelicus*, which is compared with *M. proutii* (Leidy).

—— 1897 A

Phoca vindobonensis n. sp. von Nussdorf in Wien.

Beiträge Palæontologie Oesterreich-Ungarns und des Orients (Mojsisovics und Neumayer), xi, pp. 47-70, with pls. ix-xi.

This paper contains a bibliography and a list of the described fossil species of seals.

Toula, Franz, and **Kail**, J. A. 1885 A

Ueber einen Krokodil-Schädel aus den Tertiärablagerungen von Eggenburg in Niederröstereich.

Denkschr. k. Akad. Wissensch. Wien, pp. 229-356, with 3 pls. and 3 text figs.

Traquair, R. H. 1867 A

Description of *Pygopterus greenocki* (*Agassiz*), with notes on the structural relations of the genera *Pygopterus*, *Amblypterus*, and *Eurynotus*.

Trans. Roy. Soc. Edinburgh, xxiv, pp. 701-713, with pl. xlv.

Description of species now referred by A. S. Woodward to *Nematoptychius*.

—— 1870 A

On the cranial osteology of *Polypterus*.

Jour. Anat. and Physiol., v, pp. 166-183, pl. vi.

—— 1871 A

Notes on the genus *Phaneropleuron* (Huxley), with a description of a new species from the Carboniferous formation.

Geol. Magazine (1), viii, pp. 529-535, with pl. xiv and 1 fig. in the text.

For supplementary remarks see Geol. Magazine (1), ix, 1872, p. 271.

Traquair, R. H.—Continued. 1873 A

On a new genus of fossil fish of the order *Dipnoi*.

Geol. Magazine (1), x, pp. 552-555, with pl. xiv and 1 woodcut.

Describes new genus and species, *Ganorhynchus woodwardi*.

—— 1875 A

On the structure and systematic position of the genus *Cheirolepis*.

Ann. and Mag. Nat. Hist. (4), xv, pp. 237-248, with pl. xvii.

—— 1875 B

On some fossil fishes from the neighborhood of Edinburgh.

Ann. and Mag. Nat. Hist. (4), xv, pp. 258-268, with pl. xvi.

Describes and figures *Nemoptychius greenocki*, *Wardichthys*, n. g., and *Rhizodus hibberti*.

—— 1875 C

On the structure and affinities of *Tristichopterus alatus* Egerton.

Trans. Roy. Soc. Edinburgh, xxvii, pp. 383-396.

—— 1877 A

On the Agassizian genera *Amblypterus*, *Palæoniscus*, *Gyrolepis*, and *Pygopterus*.

Quart. Jour. Geol. Soc., xxxiii, pp. 548-578.

—— 1877 B

The Ganoid fishes of the British Carboniferous formations. Part I. *Palæoniscidæ*.

Palæontographical Society, xxxi, pp. 1-60, pls. i-vii.

—— 1877 C

On the structure of the lower jaw in *Rhizodopsis* and *Rhizodus*.

Ann. and Mag. Nat. Hist. (4), xix, pp. 299-305.

—— 1878 A

On the genera *Dipterus* Sedgw. & Murch., *Palædaphus* Van Beneden and De Koninck, *Holodus* Pander, and *Cheirodus* M'Coy.

Ann. and Mag. Nat. Hist. (5), ii, pp. 1-17, with pl. iii.

Describes the structure of *Dipterus* and places the genus in the *Dipnoi*. *Palædaphus* also belongs to the *Dipnoi*.

—— 1879 A

On the structure and affinities of the *Platysomidæ*.

Trans. Roy. Soc. Edinburgh, xxix, pp. 343-391, with pls. iii-vi.

Review of this paper in Geol. Magazine (2), vii, pp. 318-321.

Traquair, R. H.—Continued. 1881 A

Report on the fossil fishes collected by the Geological Survey of Scotland in Eskdale and Liddesdale. Part I. *Ganoidei*.

Trans. Roy. Soc. Edinburgh, xxx, pp. 15-71, with pls. i-vi.

—— 1881 B

On the cranial osteology of *Rhizodopsis*.

Trans. Roy. Soc. Edinburgh, xxx, pp. 167-179, with 3 figs. in the text.

—— 1884 A

Remarks on the genus *Megalichthys* Agassiz, with description of a new species.

Geol. Magazine (3), i, pp. 115-121, plate v.

See also Proc. Roy. Phys. Soc. Edinburgh, viii, pp. 67-77, with pl. iv.

—— 1884 B

Description of a fossil shark (*Ctenacanthus costellatus*) from the Lower Carboniferous rocks of Eskdale, Dumfriesshire.

Geol. Magazine (3), i, pp. 3-8, with pl. ii.

—— 1884 C

Notes on the genus *Gyracanthus* Agassiz.

Ann. and Mag. Nat. Hist. (5), xiii, pp. 37-48.

—— 1885 A

On a specimen of *Psephodus magnus* Agassiz, from the Carboniferous limestone of East Kilbridge, Lanarkshire.

Geol. Magazine (3), ii, pp. 337-344.

—— 1885 B

On a specimen of *Psephodus magnus* Agassiz, from the Carboniferous limestone of East Kilbridge, Lanarkshire.

Trans. Geol. Soc. Glasgow, vii, pp. 392-402, with pl. xvi.

—— 1886 A

On *Harpacanthus*, a new genus of Carboniferous selachian spines.

Ann. and Mag. Nat. Hist. (5), xviii, pp. 493-496, with 2 figs. in the text.

—— 1887 A

Notes on *Chondrosteus acipenseroides* Agassiz.

Geol. Magazine (3), iv. pp. 248-257, with 5 figs.

Also in Proc. Roy. Phys. Soc. Edinburgh, ix, pp. 349-361, 1887.

—— 1888 A

Notes on Carboniferous *Selachii*.

Geol. Magazine (3), v, pp. 81-86; 101-104.

See also Proc. Roy. Phys. Soc. Edinburgh, ix, pp. 412-421.

Discusses *Cladodontidæ*, *Orodontidæ*, *Cochliodontidæ*, *Petalodontidæ*, and *Oracanthus*.

Traquair, R. H.—Continued. 1888 B

Notes on the nomenclature of the fishes of the Old Red sandstone of Great Britain.

Geol. Magazine (3), v, pp. 507-517.

—— 1888 C

On the structure and classification of the *Asterolepidæ*.

Ann. and Mag. Nat. Hist. (6), ii, pp. 485-504, with pls. xvii, xviii.

Also in Proc. Roy. Phys. Soc. Edinburgh, x, pp. 23-46, pls. i, ii.

—— 1889 A

Homosteus Asmuss compared with *Coccosteus* Agassiz.

Geol. Magazine (3), vi, pp. 1-8, pl. i.

Also in Proc. Roy. Phys. Soc. Edinburgh, x, pp. 47-57, with pl. iii.

—— 1889 B

Note on the genera *Tristycanthus* and *Ptychacanthus*.

Geol. Magazine (3), vi, pp. 27-28.

—— 1889 C

On the systematic position of the "Dendrodont" fishes.

Geol. Magazine (3), vi, pp. 490-492.

—— 1890 A

Notes on the Devonian fishes of Scaumenac Bay and Campbelltown, in Canada.

Geol. Magazine (3), vii, pp. 15-22.

—— 1890 B

On *Phlyctænius*, a new genus of *Coccosteidæ*.

Geol. Magazine (3), vii, pp. 55-60, with pl. iii.

See also Proc. Roy. Phys. Soc. Edinburgh, x, pp. 227-235, 1891, for reprint, with *Phlyctænaspis* substituted in the title for *Phlyctænius*.

—— 1890 C

On the supposed pectoral limb in *Coccosteus decipiens*.

Geol. Magazine (3), vii, p. 235.

A reply to Prof. V. Koenen, Geol. Magazine, vii, p. 191.

—— 1890 D

On the structure of *Coccosteus decipiens* Agassiz.

Ann. and Mag. Nat. Hist. (6), v, pp. 125-136, with pl. x.

Also in Proc. Roy. Phys. Soc. Edinburgh, 1889-90, pp. 211-224, pl. x.

—— 1890 E

Note on *Phlyctænius*, a new genus of *Coccosteidæ*.

Geol. Magazine (3), vii, p. 144.

A short note proposing *Phlyctænaspis* to replace *Phlyctænius*, regarded as being preoccupied by *Phlyctænium* of Zittel.

Traquair, R. H.—Continued. 1890 F

List of the fossil *Dipnoi* and *Ganoidei* of Fife and the Lothians.

Proc. Roy. Soc. Edinburgh, xvii, pp. 385–400.

—— 1891 A

Review of A. S. Woodward's "Catalogue of the fossil fishes in the British Museum."

Geol. Magazine (3), viii, pp. 123–129.

—— 1891 B

On the structure of *Coccosteus decipiens*, Agassiz.

Proc. Roy. Phys. Soc. Edinburgh, x, pp. 211–224, with pl. x.

See Traquair, R. H., 1890 D.

—— 1893 A

Notes on the Devonian fishes of Campbelltown and Scaumenac Bay.

Geol. Magazine (3), x, pp. 145–149, with 1 text fig.

Treats of *Protodus jexi*, *Doliodus problematicus*, *Cheiracanthus costellatus*, *Cephalaspis campbelltonensis*, *Cephalaspis jexi*, and *Phlyctænaspis acadica*.

—— 1893 B

Fauna der Gaskohle und der Kalksteine des Perm-formations Böhmens.

Geol. Magazine (3), x, pp. 175–178.

Review of Prof. Fritsch's work with title given above.

—— 1893 C

Notes on the Devonian fishes of Campbelltown and Scaumenac Bay in Canada. No. 3.

Geol. Magazine (3), x, pp. 262–267.

Describes *Scaumenacia curta*, *Coccosteus canadensis*, *Gyrolepis quebecensis*, and *Eusthenopteron foordii*.

See notice of this paper in Amer. Naturalist, vol. xxvii, p. 817.

—— 1893 D

Notes on the Devonian fishes of Campbelltown and Scaumenac Bay in Canada. Parts 1 and 2.

Proc. Roy. Phys. Soc. Edinburgh, xii, pp. 111–125.

Contains descriptions of the species referred to under Traquair, R. H., 1893 A, and Traquair, R. H., 1893 C.

—— 1894 A

On a new species of *Diplacanthus*, with remarks on the Acanthodian shoulder-girdle.

Geol. Magazine (4), i, pp. 254–257.

—— 1894 B

Notes on Palæozoic fishes, No. 1.

Ann. and Mag. Nat. Hist. (6), xiv, pp. 368–374, with pl. ix and 1 text fig.

Describes and figures an English species of *Phlyctænaspis*, a new one of *Acanthaspis*, and one of *Eurylepis*.

Traquair, R. H.—Continued. 1894 C

A monograph of the fishes of the Old Red sandstone of Britain. Part II, No. 1. The *Asterolepidæ*.

Palæontographical Society, xlviii, pp. 63–90, with pls. xv–xviii, and text figs. 34–50.

—— 1896 A

Review of A. S. Woodward's "Catalogue of the fossil fishes in the British Museum. Part III."

Geol. Magazine (4), iii, pp. 124–127.

—— 1899 A

Report on fossil fishes collected by the Geological Survey of Scotland in the Silurian rocks of the south of Scotland.

Trans. Roy. Soc. Edinburgh, xxxix, pp. 827–864, with pls. i–v and 18 text figs.

—— 1900 A

Notes on *Drepanaspis gmündenensis* Schlüter.

Geol. Magazine (4), vii, pp. 153–159, with 3 figs. in the text.

—— 1900 B

The bearings of fossil ichthyology on the problem of evolution.

Geol. Magazine (4), vii, pp. 463–470, 516–524.

Trautschold, H. 1874 A

Fischreste aus dem Devonischen des Gouvernements Tula.

Nouv. Mém. Soc. Imp. Natur. Moscou, xiii, pp. 263–276, with pls. xxvi, xxvii.

Figures and describes various species of *Cladodus*, *Orodus*, *Helodus*, *Psammodus*, etc.

—— 1874 B

Die Kalkbrüche von Mjatschkowa. Eine Monographie des oberen Bergkalks.

Nouv. Mém. Soc. Imp. Natur. Moscou, xiii, pp. 277–326, with pls. xxviii–xxxi.

—— 1879 A

Ueber eine Ichthyosaurus-Flosse aus dem Moskauer Kimmeridge.

Verhandl. russ.-kais. mineralog. Gesellsch. St. Petersburg (2), xii, pp. 168–173, with pl. v.

—— 1879 B

Die Kalkbrüche von Mjatschkowa. Eine Monographie des oberen Bergkalks. Schluss.

Nouv. Mém. Soc. Imp. Natur. Moscou, xiv, pp. 1–82, with pls. i–vii.

—— 1880 A

Ueber *Tomodus* Agassiz.

Bull. Soc. Imp. Natur. Moscou, lv, pt. 2, pp. 139–140.

—— 1880 B

Ueber *Bothriolepis panderi* Lahusen.

Bull. Soc. Imp. Natur. Moscou, lv, pt. 2, pp. 169–179, with 1 pl. and 5 text figs.

Trautschold, H.—Continued. 1880 C

Ueber *Dendrodus* und *Coccosteus*.

Verhandl. russ.-kais. mineralog. Gesellsch. St. Petersburg (2), xv, pp. 139–156, with pls. iii–x.

—— 1883 A

Ueber *Edestus* und einige andere Fischreste des Moskauer Bergkalks.

Bull. Soc. Imp. Natur. Moscou, lvii, pt. 2, pp. 160–174, with pl. v and 3 text figs.

—— 1886 A

Ueber das Genus *Edestus*.

Bull. Soc. Imp. Natur. Moscou, lxi, pt. 1, pp. 94–99.

—— 1888 A

Ueber *Edestus protopirata*, Trd.

Zeitschr. deutsch. geol. Gesellsch., xl, pp. 750–753, with 2 figs. in the text.

—— 1889 A

Ueber *Coccosteus megalopteryx*, Trd., *C. obtusus* und *Cheliophorus verneuili* Ag.

Zeitschr. deutsch. geol. Gesellsch., xli, pp. 35–48, with pls. iii–vi.

—— 1889 B

Ueber vermeintliche Dendrodonten.

Zeitschr. deutsch. geol. Gesellsch., xli, pp. 621–634, with pls. xxiii–xxv.

—— 1890 A

Ueber *Protopirata centrodon*, Trd.

Bull. Soc. Imp. Natur. Moscou (n. s.), iv, pp. 317–321, with 1 fig. in the text.

The genus *Edestus* is considered.

Treuenfels, Paul. 1896 A

Die Zähne von *Myliobatis aquila*.

Inaugural dissertation at Univ. Basel. Breslau, 1896, 8vo., pp. 1–34, with pls. i, iii.

Troost, G. 1835 A

On the localities in Tennessee in which bones of the gigantic mastodon and *Megalonyx jeffersonii* are found.

Trans. Geol. Soc. Penn., i, pp. 139–146; 236–243.

Troschel, F. H. 1861 A

Ueber den Unterkiefer der Schlangen und über die fossile Schlange von Rott.

Archiv Naturgesch., xxvii, i, pp. 326–360, with pl. x.

Trouessart, E. L. 1889 A

Mammifères.

Annuaire Géol. Universel, v. 1888, Paris. Pp. 915–970.

Généralités, pp. 915–916; Analyse des principaux mémoires relatifs á la classe des mammifères en général, pp. 916–942; Résumé systématique espèces nouvelles et travaux relatifs aux differents ordres, familles, etc., pp. 942–970.

Trouessart, E. L.—Continued. 1892 A

The fiction of the American horse and the truth on this disputed point.

Science, xx, p. 188.

—— 1897 A

Catalogus Mammalium tam viventium quam fossilium. Nova editio.

Berolini, 1897, pp. 665–1264, 8vo.

Contains the orders *Primates*, *Prosimiæ Chiroptera*, *Insectivora*.

—— 1898 A

Catalogus Mammalium tam viventium quam fossilium. Nova editio.

Berolini, 1898, pp. 665–1264, 8vo.

Contains the orders *Sirenia*, *Cetacea*, *Edentata*, *Marsupialia*, *Allotheria*, *Monotremata*.

—— 1899 A

Catalogus Mammalium tam viventium quam fossilium.

Berolini, 1899, pp. 1265–1469, 8vo.

Appendix (Addenda et Corrigenda) and alphabetical index.

True, Frederick W. 1889 A

A review of the family *Delphinidæ*.

Bull. U. S. Nat. Mus., No. 36, Washington, D. C., 1889, pp. 191, with 47 pls.

—— 1891 A

The puma, or American lion: *Felis concolor* of Linnæus.

Ann. Rep. Smithson. Inst., 1889; Rep. Nat. Mus., pp. 591–608, with pl. xciv.

—— 1896 A

A revision of the American moles.

Proc. U. S. Nat. Mus., xix, pp. 1–111, with pls. i–v and 46 text figs.

Tscherski, J. D. 1892 A

Beschreibung der Sammlung posttertiärer Säugethiere.

Mém. Acad. Imp. Sci., St. Pétersbourg (7), xl, No. 1, pp. i–v, 1–511, with pls. i–vi.

Tullberg, Tycho. 1899 A

Ueber das System der Nagethiere: eine phylogenetische Studie.

8vo, pp. i–v; 1–514; A1–A18, pls. i–lvii. Upsala, 1899.

Pp. 501–514 are occupied by a list of works dealing with the subject.

Tuomey, M. 1847 A

Discovery of the cranium of the zeuglodon.

Amer. Jour. Sci. (2), iv, pp. 283–285, with 1 fig. in the text.

—— 1847 B

Notice of the discovery of a cranium of the zeuglodon.

Proc. Acad. Nat. Sci. Phila. iii, pp. 151–153, with 2 woodcuts.

Tuomey, M.—Continued. 1847 C

Notice of the discovery of a cranium of the zeuglodon (*Basilosaurus*).

Jour. Acad. Nat. Sci. Phila. (2), i, pp. 16–17.

—— 1850 A

[Remarks on a fossil reptile from Alabama, belonging to the genus *Leiodon*. Followed by remarks by Prof. L. Agassiz.]

Proc. Amer. Assoc. Adv. Sci., 3d meeting, Charleston, S. C., 1850, p. 74.

—— 1858 A

[Descriptions and figures of *Ctenacanthus elegans*, *Cladodus newmani*, *C. magnificus*.]

Second Biennial Report Geol. Alabama, by M. Tuomey, A. M., edited by J. W. Mallet, Ph. D. Pp. i–xix, 1–292.

Appended are lists of Cretaceous and Tertiary fossils, including a number of sharks, pp. 261–268. The species named above are described on pp. 38–40.

Turner, George. 1799 A

Memoir on the extraneous fossils denominated mammoth bones; principally designed to show that they are the remains of more than one species of nondescript animal.

Trans. Amer. Philos. Soc., iv, pp. 510–518.

Turner, H. N., jr. 1848 A

Observations relating to some of the foramina at the base of the skull in *Mammalia*, and on the classification of the order *Carnivora*.

Proc. Zool. Soc. Lond., 1848, pt. xvi, pp. 63–88.

—— 1850 A

On the generic subdivisions of the *Bovidæ*, or hollow-horned ruminants.

Proc. Zool. Soc. Lond., 1850, pt. xviii, pp. 164–178.

—— 1872 A

Some observations on the dentition of the narwhal (*Monodon monoceros*).

Jour. Anat. and Physiol., vii, pp. 75–79.

—— 1873 A

Note on a bidental skull of a narwhal.

Jour. Anat. and Physiol., viii, pp. 133–134.

—— 1876 A

Additional note on the dentition of the narwhal (*Monodon monoceros*).

Jour. Anat. and Physiol., x, p. 516.

Turner, William. 1899 A

On the development and morphology of the marsupial shoulder girdle.

Trans. Roy. Soc. Edinburgh, xxxix, pp. 749–770, with pls. i, ii.

Ubaghs, Casimir. 1875 A

La *Chelonia hoffmanni*.

Ann. Soc. Géol. Belgique, ii, pp. 197–205.

Udden, J. A. 1891 A

Megalonyx beds in Kansas.

Amer. Geologist, vii, pp. 340–345, with 3 woodcuts in the text.

—— 1899 A

Dipterus in the American Middle Devonian.

Jour. Geology, vii, pp. 494–495, with 1 fig. in the text.

Underwood, Lucien. 1890 A

A bison at Syracuse, N. Y.

Amer. Naturalist, xxiv, pp. 953–954.

Followed by a note by Professor Cope identifying the specimen as *Bos americanus*.

Ussow, S. A. 1898 A

Die Entwicklung der Cycloid-Schuppe der Teliostier.

Bull. Soc. Imp. Natur. Moscou (n. s.), xi, 1897, pp. 339–366, with pls. vi, vii.

—— 1900 A

Zur Anatomie und Entwicklungsgeschichte der Wirbel der Teleostier.

Bull. Soc. Imp. Natur. Moscou (n. s.), xv, 1900, pp. 175–240, with pls. i–iv.

Vaillant, Léon. 1883 A

Remarques sur les affinités naturelles des familles composant le sous-ordre des poissons malacoptérygiens abdominaux.

Ann. Sci. Naturelles (6), Zool., xv, art. 7, pp. 1–13.

—— 1891 A

Sur la signification taxonomique du genre *Emys* C. Duméril.

Ann. Sci. Naturelles (7), Zool., xii, pp. 51–63.

—— 1894 A

Essai sur la classification générale des chéloniens.

Ann. Sci. Naturelles (7), Zool., xvi, pp. 331–345.

Van Beneden, P. J. 1861 A

Un mammifère nouveau du Crag d'Anvers.

Bull. Acad. Roy. Belgique (2), xii, pp. 22–28.

Describes *Squalodon antverpiensis*, and holds that *Squalodon* and *Zeuglodon* belong to different families.

Van Beneden, P. J.—Cont'd. 1861 B

Sur le développement de la queue des poissons plagiostomes.

Bull. Acad. Roy. Belgique (2), xi, pp. 287-293, with 1 pl.

Published also as a separate, with pp. 3-8.

—— 1865 A

Recherches sur les ossements provenant du Crag d'Anvers, les Squalodons.

Mém. Acad. Roy. Belgique, xxxv, art. iii, pp. 1-85, with pls. i-iv, and many text figs.

On pp. 11-12 of this memoir is found a list of the works which have been published on the Zeuglodonts and Squalodonts.

—— 1868 A

De la composition du bassin des cétacés.

Bull. Acad. Roy. Belgique (2), xxv, pp. 428-433, with 1 pl.

—— 1872 A

Les Balenidés fossiles d'Anvers.

Jour. de Zoologie, i, pp. 407-419.

Extract from Bull. Acad. Roy. Belgique(2), xxxiv, pp. 6-20, 1872.

—— 1872 B

Les baleines fossiles d'Anvers.

Bull. Acad. Roy. Belgique (2), xxxiv, pp. 6-20.

—— 1875 A

Le squelette de la baleine fossile du Musée de Milan.

Bull. Acad. Roy. Belgique (2), xl, pp. 736-758, with 1 pl.

Describes and figures *Plesiocetus cortesi*.

—— 1877 A

Description des ossements fossiles des environs d'Anvers. Première partie: Les phoques ou les amphitériens.

Ann. Mus. Roy. d'Hist. Nat. Belgique, i, pp. 1-88, with pls. i-xviii, and 17 figs. and 8 maps in the text.

—— 1877 B

Note sur un cachalot nain du Crag d'Anvers (*Physeterula dubusii*).

Bull. Acad. Roy. Belgique (2), xliv, pp. 851-856, with 1 pl.

—— 1880 A

Description des ossements fossiles des environs d'Anvers. Deuxième partie: Cétacés, genres *Balænula*, *Balæna*, et *Balænotus*.

Ann. Mus. Roy. d'Hist. Nat. Belgique, iv, pp. 1-83, with pls. i-xxxix.

This work contains a very full bibliography of the fossil *Cetacea*.

—— 1880 B

Les mysticètes à court fanons des sables des environs d'Anvers.

Bull. Acad. Roy. Belgique (2), l, pp. 11-26.

Van Beneden, P. J.—Cont'd. 1882 A

Description des ossements fossiles des environs d'Anvers. Troisième partie: Cétacés, genres *Megaptera*, *Balænoptera*, *Burtinopsis*, et *Erpetocetus*.

Ann. Mus. Roy. d'Hist. Nat. Belgique, vii, pp. 1-90, with pls. xl-cix.

Part iv, describing the genus *Plesiocetus*, is found in vol. ix of the Annales. Pt. v, describing *Amphicetus*, *Heterocetus*, etc., is in vol. xiii. These genera have not been found in North America.

—— 1882 B

Une baleine fossile de Croatie appartenant au genre Mésocète.

Mém. Acad. Roy. Sci. Lettres et Beaux-Artes, xliv, art. 2, pp. 3-29, with pls. i-ii.

Van Beneden, P. J., and **Gervais**, P. 1880 A

Ostéographie des cétacés vivants et fossiles, comprenant la description et l'iconographie du squelette et du système dentaire de ces animaux; ainsi que des documents relatifs à leur histoire naturelle.

Paris, 1880, pp. i-viii, 1-634, with atlas of 64 pls.

Van Beneden, P. J. and **Koninck**, L. G. de. 1864 A

Notice sur le *Palædaphus insignis*.

Bull. Acad. Roy. Belgique (2), xvii, pp. 143-151, with pls. i, ii.

Van Rensselaer, Jeremiah. 1826 A

Notice of a recent discovery of the fossil remains of the mastodon.

Amer. Jour. Sci. (1), xi, pp. 246-250.

—— 1827 A

On the fossil remains of the mastodon lately found in Ontario County, N. Y.

Amer. Jour. Sci. (1), xii, pp. 380-381.

—— 1828 A

On the fossil tooth of an elephant found near the shore of Lake Erie, and on the skeleton of a mastodon lately discovered on the Delaware and Hudson Canal.

Amer. Jour. Sci. (1), xiv, pp. 31-33.

Van Wijhe, J. W. 1882 A

Ueber das Visceralskelet und die Nerven des Kopfes der Ganoiden und von *Ceratodus*.

Niederländisches Archiv Zoologie, v, pp. 205-320, with pls. xv and xvi.

Besides the subjects of the title, this paper treats of the "otic bones."

Vasseur, Gaston. 1874 A

Sur le pied de derrière de l'*Hyænodon parisiensis*.

Comptes rend. Acad. Sci. Paris, lxxviii, pp. 1446-1447.

Vasseur, Gaston—Continued. 1875 A

Sur le cubitus de *Coryphodon oweni.*

Bull. Soc. Géol., France (3), iii, pp. 181-186, pl. iii.

Vetter, Benjamin. 1881 A

Die Fische aus dem lithographischen Schiefer im Dresdener Museum.

Mittheil. k. min., geol., u. præhist. Mus. Dresden, Heft 4, pp. i-viii, 1-118, with pls. i-iii.

—— 1885 A

Ueber die Verwandschaftsbeziehungen zwischen Dinosauriern und Vögeln.

Festschrift naturw., Gesellsch. Isis, Dresden, Feier 50jährg. Bestehens, pp. 109-122.

Vogt, Carl. 1880 A

Archæopteryx macrura, an intermediate form between birds and reptiles.

The Ibis (4), iv, pp. 434-456, with pl. xiii, and 4 figs. in the text.

Voigt, Fr. S. 1835 A

Thier-Fährten in Hildburghauser Sandsteine (*Palæopithecus*).

Neues Jahrb. Mineral., 1835, pp. 322-326.

Vrolik, A. J. 1873 A

Ueber die Verknöcherung und die Knochen des Schädels der *Teleostei.*

Niederländisches Archiv. Zoologie, i, pp. 219-318, with pls. xviii-xxii.

I. Synonymie der Schädelknochen bei den *Teleostei*, pp. 221-230, with a table.

II. Ueber die Verknöcherung des Teleostierschädels, pp. 231-260.

III. Die Knochen des Teleostierschädels, pp. 261-290, with a table.

IV. Die Verknöcherung des Schläfenbeins der Säugethiere, pp. 291-318.

This paper also gives consideration to the "otic bones." In opposition to the views of Vrolik, see Van Wijhe, J. W., 1882 A.

Wagner, Andreas. 1851 A

Beiträge zur Kenntniss der in den lithographischen Schiefern abgelagerten urweltlichen Fische.

Abhandl. k. bayer. Akad. Wissensch., math.-phys. Cl., vi. pp. 1-80, with pls. i-iv.

—— 1851 B

Beschreibung einer neuen Art von *Ornithocephalus*, nebst kritischer Vergleichung der in der k. palæontologischen Sammlung zu München aufgestellten Arten aus dieser Gattung.

Abhandl. k. bayer. Akad. Wissensch., math.-phys. Cl., vi, pp. 127-193, pls. v-vi.

—— 1853 A

Beschreibung einer fossilen Schildkröte und etlicher anderer Reptilienüberreste aus den lithographischen Schiefern und dem Grünsandsteine von Kelheim.

Abhandl. k. bayer. Akad. Wissensch., math.-phys. Cl., vii, pp. 241-264, with pls. iv-vi.

Describes *Platychelys oberdorferi*, *Idiochelys*, and *Homœosaurus*.

—— 1861 A

On a new fossil reptile supposed to be furnished with feathers.

Ann. and Mag. Nat. Hist. (3), ix, pp. 261-267 (1862).

Translated from the Sitzungsber. Akad. Wissensch. München, 1861, p. 146.

—— 1861 B

Monographie der fossilen Fische aus den lithographischen Schiefern Bayerns. Erste Abtheilung. Plakoiden und Pyknodonten.

Abhandl. k. bayer. Akad. Wissensch., math.-phys. Cl., ii. Abth., ii, pp. 277-352, with pls. iv-vii.

—— 1863 A

Monographie der fossilen Fische aus den lithographischen Schiefern Bayerns. Zweite Abtheilung.

Abhandl. k. bayer. Akad. Wissensch., math.-phys. Cl., ix, pp. 613-748, with pls. ii-vii.

Also issued as reprint with pp. 43-138.

Wagner, George. 1898 A

On some turtle remains from the Fort Pierre.

Kansas Univ. Quarterly, vii, A, pp. 201-205, with 2 figs. in the text.

—— 1899 A

On *Tetracaulodon* (*Tetrabelodon*) *shepardii* Cope.

Kansas Univ. Quarterly, viii, A, pp. 99-103, with pls. xxiv, xxv.

Wailes, B. L. C. 1854 A

Report on the agriculture and geology of Mississippi, embracing a sketch of the social and natural history of the State.

Pp. i-xx; 1-371.

Published by order of the legislature.

Contains remarks on a few fossil vertebrates and a list, by Dr. Leidy, of those found in Mississippi.

Walcott, C. D. 1892 A

Notes on the discovery of a vertebrate fauna in Silurian (Ordovician) strata.

Bull. Geol. Soc. America, iii, pp. 153-172, pls. 3-5.

Describes *Dictyorhabdus priscus*, *Astraspis desiderata*, and *Eryptichius americanus.*

See Neues Jahrb., Mineral., 1895, p. 162, for Otto Jaekel's review; Amer. Naturalist, xxvii, p. 268, for notice by Cope.

Walcott, C. D.—Continued. 1900 A

Correspondence relating to collection of vertebrate fossils made by the late Prof. O. C. Marsh.

Science (2), xi, pp. 22–23.

This letter, directed to Prof. S. P. Langley, contains a partial list of the types of species described by Professor Marsh, and now in the National Museum.

Walker, S. T. 1883 A

On the origin of the fossil bones discovered in the vicinity of Tise's Ford, Florida.

Proc. U. S. Nat. Mus., vi, pp. 427–428.

Walter, Ferdinand. 1887 A

Das Visceralskelet und seine Muskulatur bei den einheimischen Amphibien und Reptilien.

Jenaische Zeitschr. Naturwiss., xxi (xiv), pp. 1–45, with pls. i–iv.

Wanner, Atreus. 1889 A

The discovery of fossil tracks, algæ, etc., in the Triassic of York County, Pa.

Ann. Report Geol. Surv. Penn., for 1887, pp. 21–27, with pls. iv–xiii.

No names are given to the tracks figured.

—— 1892 A

Fossil tracks in the Trias of York County, Pa.

Proc. Amer. Assoc. Adv. Sci., 39th meeting, Washington, 1891, p. 286. A brief abstract.

Ward, Henry A. 1864 A

Notice of the *Megatherium cuvieri*, the giant fossil ground-sloth of South America. Presented to the University of Rochester by Hiram Sibley, esq.

Pp. 1–84, with 1 large pl.

Has, in addition, a brief description of *Megalonyx jeffersoni*.

Ward, Henry L. 1887 A

The pelvis of the dugong.

Science, ix, p. 586, with 1 woodcut.

Ward, John. 1890 A

The geological features of the North Staffordshire coal fields, their organic remains, their range and distribution; with a catalogue of the fossils of the Carboniferous system of North Staffordshire.

Trans. North Staffordshire Mining and Mechan. Engineers, x, pp. 1–189, with index, pp. i–ix, and pls. i–ix.

Warren, John C. 1846 A

On the osteology and dentition of some North American mastodons.

Ann. and Mag. Nat. Hist. (1), xvii, pp. 145–150.

A letter addressed to Prof. R. Owen and sent by him to the editors.

—— 1850 A

On the *Mastodon angustidens*.

Proc. Amer. Assoc. Adv. Sci., 2d meeting, 1849, Cambridge, Mass., pp. 93–94.

—— 1852 A

[Remarks on a supposed tooth of *Mastodon angustidens*.]

Proc. Boston Soc. Nat. Hist., iv, pp. 129–131.

—— 1852 B

[Remarks on the supposed food of *Mastodon giganteus*.]

Proc. Boston Soc. Nat. Hist., iv, p. 154.

—— 1852 C

The *Mastodon giganteus* of North America.

Pp. i–viii; 1–219, 4to, with vignette and pls. i–xxvi and 1 large additional pl. Boston, 1852, John Wilson & Son.

A second edition of this work was published in 1855.

—— 1854 A

Remarks on some fossil impressions in the sandstone rocks of Connecticut River.

8vo: pp. 1–54, with 1 pl. and 2 text figs. Boston, 1854.

A popular account of the impressions, footmarks, etc., of the sandstones referred to.

—— 1855 A

Supernumerary tooth in *Mastodon giganteus*.

Amer. Jour. Sci. (2), xix, pp. 349–353.

—— 1855 B

The *Mastodon giganteus* of North America.

2d edition, 260 pp., 4to, with 31 pls.: Boston, 1855.

Contains 3 new plates and some additions to text of the first edition, which appeared in 1852.

—— 1855 C

Supernumerary tooth in jaw of *Mastodon*.

Proc. Boston Soc. Nat. Hist., v, pp 146–150.

—— 1855 D

Brief history of the zeuglodon.

Proc. Boston Soc. Nat. Hist., v, pp. 91–92.

Warren, John C.—Continued. 1856 A

New remarkable gigantic fossils and footmarks.

Proc. Boston Soc. Nat. Hist., v, pp. 298–306.

Waterhouse, G. R. 1838 A

On the skull and dentition of the American badger (*Meles labradoria*).

Proc. Zool. Soc. Lond., 1838, pt. vi, pp. 153–154.

—— 1839 A

On the skulls and dentition of the *Carnivora*.

Proc. Zool. Soc. Lond., 1839, pt. vii, pp. 135–137.

Weber, Max. 1886 A

Studien über Säugethiere. Ein Beitrag zur Frage nach dem Ursprung der Cetaceen.

Jena, 1886, 8vo, pp. i–vi; 1–252, with pls. i–iv.

Reviewed by M. Schlosser in Archiv f. Anthrop., xviii, pp. 143–146.

—— 1887 A

Über die cetoide Natur der *Promammalia*.

Anatom. Anzeiger, ii, pp. 42–55.

—— 1888 A

Anatomisches uber Cetaceen. I. Ueber den Carpus der Cetaceen; II. Ueber den Magen der Cetaceen.

Morpholog. Jahrbuch, xiii, pp. 616–653, with pls. xxvii–xxviii, and 2 woodcuts.

—— 1893 A

Bemerkungen über den Ursprung der Haare und über Schuppen bei Säugethieren.

Anatom. Anzeiger, viii, pp. 413–423.

—— 1893 B

Zur Frage nach dem Ursprung der Schuppen der Säugethiere.

Anatom. Anzeiger, viii, pp. 649–651.

—— 1898 A

Studien über Säugethiere.

Pp. i–iv, 1–152, with pls. i–iv. 8vo, Jena, 1898.

Part II of this work is entitled "Anatomische Bemerkungen über Elephas," pp. 135–152, pl. iv.

Weil, Richard. 1899 A

Development of the ossicula audita in the opossum.

Ann. N. Y. Acad. Sci., xii, pp. 103–107, with pls. ii, iii.

Weithofer, Anton. 1888 A

Beiträge zur Kenntniss der Fauna von Pikermi bei Athen.

Beiträge Paläontologie Oesterreich-Ungarns (Mojsisovics and Neumayer), vi, pp. 225–292, with pls. x–xix.

Reviewed by M. Schlosser in Archiv f. Anthrop. xix, pp. 146–148.

—— 1888 B

Einige Bemerkungen über den Carpus der Proboscidier.

Morpholog. Jahrbuch, 1888, pp. 507–516.

—— 1890 A

Die fossilen Proboscidier des Arnothales in Toskana.

Beiträge Paläontologie Oesterreich-Ungarns (Mojsisovics and Neumayer), viii, pp. 108–240, with pls. i–xv.

Review in Archiv f. Anthrop., xx, pp. 116–118.

—— 1893 A

Proboscidiani fossili di Valdarno in Toscano.

Memoire per servire alla descrizione della carta geologica d'Italia, iv, pt. 2, pp. 1–152, with pls. 1–xv.

Wellburn, Edgar D. 1900 A

On the genus *Megalichthys*, Agassiz; its history, systematic position, and structure.

Proc. Yorkshire Geol. and Polytech. Soc. (2), xiv, pp. 52–71, with pls. xiii–xvii, xix.

—— 1900 B

On *Rhadinichthys monensis*, Egerton, and its distribution in the Yorkshire coal field.

Geol. Magazine (4), vii, pp. 260–263, with 1 fig. in the text.

Weller, Stuart. 1899 A

A peculiar Devonian deposit in northeastern Illinois.

Jour. Geology, vii, pp. 483–488, with 3 text figs.

Reports occurrence of *Ptychodus calceolus*, *Diplodus priscus*, and *D. striatus*.

West, H. H. 1877 A

Wonderful discoveries in the Sandstone rocks of Colorado.

Western Review of Science and Industry, i, pp. 564–565 (Kansas City, Mo.).

A description of the finding of some huge reptilian bones near Morrison, Colo. Copied from the Colorado Springs Gazette.

Weyhe, ——. 1875 A

Uebersicht der Säugethiere nach ihren Beckenformen.

Zeitschr. gesammt. Naturwiss., xlv (n. F. xi), 1875, pp. 97–123.

Wheatley, Charles M. 1861 A

Remarks on the Mesozoic red sandstone of the Atlantic slope, and notice of the discovery of a bone bed therein, at Phœnixville, Pa.

Amer. Jour. Sci. (2), xxxii, pp. 41–48.

—— 1871 A

Notice of the discovery of a cave in eastern Pennsylvania, containing remains of post-Pliocene fossils, including those of mastodon, tapir, megalonyx, mylodon, etc.

Amer. Jour. Sci. (3), i, pp. 235–237, with 2 figs. showing the location of the cave.

—— 1871 B

The bone cave of eastern Pennsylvania.

Amer. Jour. Sci. (3), i, pp. 384–385.

Contains a list of the species found up to that time in Port Kennedy bone cave.

Wheeler, William. 1878 A

A fossil tusk found in Franklin County, [Kansas].

Trans. Kansas Acad. Sci., vi, p. 11.

Supposed to be mastodon.

Wheeler, William Morton. 1899 A

George Baur's life and writings.

Amer. Naturalist, xxxiii, pp. 15–30, with portrait.

This paper ends with a list of Dr. Baur's scientific writings, 144 in number.

Whipple, S. H. 1844 A

Notice of bones of mastodon.

Proc. Amer. Philos. Soc., iv, pp. 35–36.

A letter accompanying a collection of mastodon bones from Benton County, Mo.

White, C. A. . 1883 A

On the commingling of ancient faunal and modern floral types in the Laramie group.

Amer. Jour. Sci. (3), xxvi, pp. 120–123.

—— 1887 A

On the interrelations of contemporaneous fossil faunas and floras.

Amer. Jour. Sci. (3), xxxiii, pp. 364–374.

White, Philip J. 1895 A

The existence of skeletal elements between the mandibular and hyoid arches in *Hexanchus* and *Læmargus*.

Anatom. Anzeiger, xi, pp. 57–60, with 3 figs.

Whiteaves, J. F. 1880 A

On a new species of *Pterichthys*, allied to *Bothriolepis ornata*, from the Devonian rocks of the north side of the Baie des Chaleurs.

Amer. Jour. Sci. (3), xx, 132–136.

Whiteaves, J. F.—Continued. 1881 A

On some remarkable fossil fishes from the Devonian rocks of Scaumenac Bay, Province of Quebec.

Amer. Jour. Sci. (3), xxi, pp. 494–496.

Also in Ann. and Mag. Nat. Hist. (5), viii, 159–162.

Diplacanthus striatus? Phaneropleuron curtum, *Eusthenopteron foordii*, *Glyptolepis microlepidotus*, *Glyptolepis* ——, and *Cheirolepis canadensis* are described.

—— 1881 B

On a new species of *Pterichthys*, allied to *Bothriolepis ornata* Eichwald, from the Devonian rocks of the north side of the Baie des Chaleurs.

Canadian Naturalist (2), x, pp. 23–27.

—— 1881 C

On some remarkable fossil fishes from the Devonian rocks of Scaumenac Bay, P. Q., with descriptions of a new genus and three new species.

Canadian Naturalist (2), x, pp. 27–35.

—— 1881 D

Description of a new species of *Psammodus* from the Carboniferous rocks of the island of Cape Breton.

Canadian Naturalist (3), x, p. 36.

Describes *Psammodus bretonensis*.

—— 1881 E

On some fossil fishes, crustacea, and mollusca from the Devonian rocks at Campbellton, N. B., with descriptions of five new species.

Canadian Naturalist (2), x, pp. 93–101, with 1 fig. in the text.

Describes *Coccosteus acadicus*, *Cephalaspis campbelltonensis*, *Ctenacanthus latispinosus* and *Homacanthus sp. indet.*

—— 1883 A

Recent discoveries of fossil fishes in the Devonian rocks of Canada.

Proc. Amer. Assoc. Adv. Sci., 31st meeting, Montreal, 1882, pp. 353–356.

—— 1883 B

Recent discoveries of fossil fishes in the Devonian rocks of Canada.

Amer. Naturalist, xvii, pp. 158–164.

—— 1887 A

Illustrations of the fossil fishes of the Devonian rocks of Canada.

Trans. Roy. Soc. Canada, iv, sec. iv, 1886, pp. 101–110; pls. vi–x.

—— 1889 A

Illustrations of the fossil fishes of the Devonian rocks of Canada. Part II.

Trans. Roy. Soc. Canada, vi, sec. iv, 1888, pp. 77–96; pls. v–x.

Whiteaves, J. F.—Continued. 1889 B

On some fossils from the Hamilton formation of Canada, with a list of the species at present known from that formation and province. 3. The fossils of the Triassic rocks of British Columbia. 4. On some Cretaceous fossils from British Columbia, the Northwest Territory, and Manitoba.

Geol. and Nat. Hist. Survey of Canada. Contrib. to Canad. Palæont. i, part ii, art. 2, pp. 91–196, with pls. xii–xxvi.

—— 1892 A

The fossils of the Devonian rocks of the islands, shores, or immediate vicinity of Lakes Manitoba and Winnipegosis.

Geol. Surv. Canada. Contrib. to Canad. Palæont., i, part iv, art. 6, pp. 255–359, with pls. xxxiii–xlvii.

On pages 353 and 354, pls. xlvi and xlvii, certain fossil fishes are described and figured.

—— 1898 A

Note on a fish tooth from the Upper Arisaig series of Nova Scotia.

Canadian Record of Science, vii, pp. 461–462, with 1 text fig.

Also in Report Brit. Assoc. Adv. Sci. for 1897, Toronto meeting, pp. 656–657.

Describes *Dendrodus arisaigensis* from rocks supposed to be of Silurian, possibly Devonian, age.

—— 1898 B

On some additional or imperfectly understood fossils from the Hamilton formation of Ontario, with a revised list of the species therefrom.

Geol. Surv. Canada. Contrib. to Canad. Palæont., i, pp. 361–436, with pls. xlviii–l.

—— 1899 A

The Devonian system in Canada.

Science (2), x, pp. 402–412; 430–438.

Also in Proc. Amer. Assoc. Adv. Sci., xlviii (Columbus), pp. 193–223.

Whitfield, R. P. 1888 A

Evidence confirmatory of *Mastodon obscurus* Leidy as an American species.

Proc. Amer. Assoc. Adv. Sci., 36th meeting, New York, 1887, pp. 252–253.

—— 1890 A

Observations on a fossil fish from the Eocene beds of Wyoming.

Bull. Amer. Mus. Nat. Hist., iii, pp. 117–120, with pl. iv.

—— 1891 A

Mastodon remains on New York Island.

Science, xviii, p. 342.

Whitfield, R. P.—Continued. 1900 A

Note on the principal type specimen of *Mosasaurus maximus* Cope, with illustrations.

Bull. Amer. Mus. Nat. Hist., xiii, pp. 25–29, with pls. iv, v.

Whitfield, R. P. and **Hovey**, E. O. 1900 A

A catalogue of the types and figured specimens in the palæontological collection of the geological department, American Museum of Natural History.

Bull. Amer. Mus. Nat. Hist., xi, pp. 190–356.

On page 348 there is noted the presence of five types of fossil fishes in the museum.

Whitney, J. D. 1867 A

Notice of a human skull recently taken from a shaft near Angels, Calaveras County.

Amer. Jour. Sci. (2), xliii, pp. 265–267.

Taken from Proc. California Acad. Nat. Sci., iii, pp. 277.

—— 1879 A

The animal remains, not human, of the auriferous gravel series.

Mem. Mus. Comp. Zool., vi, pp. 239–258.

This forms sec. iv of chap. iii of Whitney's "The auriferous gravels of the Sierra Nevada of California."

The descriptions of the species have all been published by Dr. Leidy elsewhere, but those of the equine animals are reproduced.

Whittlesey, Charles. 1848 A

Notes upon the drift and alluvium of Ohio and the West.

Amer. Jour. Sci. (2), v, pp. 205–217.

—— 1869 A

On the evidences of the antiquity of man in the United States.

Proc. Amer. Assoc. Adv. Sci., 17th meeting, Chicago, 1868, pp. 268–288.

Wiedersheim, Robert. 1876 A

Die ältesten Formen des Carpus und Tarsus der heutigen Amphibien.

Morpholog. Jahrbuch, ii, pp. 421–434, with pl. xxix.

See also "Nachträgliche Bemerkungen" in vol. iii, pp. 152–154, with 5 figs.

—— 1877 A

Das Kopfskelet der Urodelen.

Morpholog. Jahrbuch, iii, pp. 352–448, with pls. xix–xxiii and 1 woodcut; pp. 459–548, with pls. xxiv–xxvii and 5 woodcuts.

—— 1878 A

Labyrinthodon rütimeyeri. Ein Beitrag zur Anatomie von Gesammtskelet und Gehirn der triassischen Labyrinthodonten.

Abhandl. schweizer. paläontolog. Gesellsch., v, pp. 1–56, with 3 pls.

Wiedersheim, Robert—Cont'd. 1880 A

Das Skelet von *Pleurodeles waltlii.*

Jenaische Zeitschr. Naturwiss., xiv (vii), pp. 1-38, with pl. i.

—— 1880 B

Das Skelet und Nervensystem von *Lepidosiren annectens* (*Protopterus*).

Jenaische Zeitschr. Naturwiss., xiv (vii), pp. 155-192, with pls. vii, viii.

—— 1881 A

Zur Palæontologie Nord-Amerikas.

Biolog. Centralbl., i, pp. 359-372.

—— 1884 A

Die Stammesentwicklung der Vögel.

Biolog. Centralbl., iii, pp. 654-668.

—— 1889 A

Über die Entwicklung des Schulter- und Beckengürtels.

Anatom. Anzeiger, iv, pp. 428-441.

—— 1890 A

Weitere Mitteilungen über die Entwicklungsgeschichte des Schulter- und Beckensgürtels.

Anatom. Anzeiger, v, pp. 13-26.

Wiegmann, Fr. Aug. 1838 A

Ueber das Gebiss des Wallrosses.

Archiv Naturgesch., iv, Bd. i, pp. 113-130.

Wieland, George R. 1896 A

Archelon ischyros: a new gigantic cryptodire testudinate from the Fort Pierre Cretaceous of South Dakota.

Amer. Jour. Sci. (4), ii, pp. 399-412, with pl. vi and 19 figs. in the text.

Describes under above name the carapace and other bones of a new turtle.

—— 1898 A

The Protostegan plastron.

Amer. Jour. Sci. (4), v, pp. 15-20, with pl. ii and 2 figs. in the text.

—— 1899 A

The terminology of vertebral centra.

Amer. Jour. Sci. (4), viii, pp. 163-164.

—— 1900 A

The skull, pelvis, and probable relationships of the huge turtles of the genus *Archelon* from the Fort Pierre Cretaceous of South Dakota.

Amer. Jour. Sci. (4), ix, pp. 237-251, with pl. ii and 6 text figs.

Noticed by Osborn, Science, xii, 1900, p. 2.

—— 1900 B

Some observations on certain well-marked stages in the evolution of the testudinate humerus.

Amer. Jour. Sci. (4), ix, pp. 413-424, with 23 text. figs.

Wilckens, M. 1884 A

Uebersicht über die Forschungen auf dem Gebiete der Paläontologie der Haustiere. 1. Die pferdeartigen Tiere des Tertiärs.

Biolog. Centralbl., iv, pp. 137-154; 183-188.

—— 1884 B

Uebersicht über die Forschungen auf dem Gebiete der Paläontologie der Haustiere. 2. Die Pferde des Diluviums.

Biolog. Centralbl.. iv, pp. 294-310; 327-344.

Contains Lydekker's list of Pliocene and recent *Equidæ.*

—— 1885 A

André Sanson, Sur les Equidés quarternaires.

Biolog. Centralbl., v, pp. 184-187.

—— 1885 B

Uebersicht über die Forschungen auf dem Gebiete der Paläontologie der Haustiere. 5. Die schweinartigen Tiere (Suiden).

Biolog. Centralbl., v, pp. 208-222; 233-241; 263-270; 295-308; 332.

—— 1885 C

Uebersicht über die Forschungen auf dem Gebiete der Paläontologie der Haustiere. 6. Die Kamelartigen Tiere (Cameliden).

Biolog. Centralbl., v, pp. 418-434.

—— 1885 D

Uebersicht über die Forschungen auf dem Gebiete der Paläontologie der Haustiere. 7. Die hundartigen Tiere (Caniden) des Tertiärs.

Biolog. Centralbl., v, pp. 459-468; 489-499; 518-529.

—— 1885 E

Uebersicht über die Forschungen auf dem Gebiete der Paläontologie der Haustiere. 3. Die Abstammung des Rindes und die tertiären Formen desselben.

Biolog. Centralbl., iv, pp. 749-766.

Reviews of Wilckens's various papers by M. Schlosser in Archiv f. Anthrop., xvii, pp. 187-191; xviii, pp. 146-150.

—— 1888 A

Beitrag zur Kenntniss des Pferdegebisses mit Rücksicht auf die fossilen Equiden von Maragha in Persien.

Nova Acta Caes. Akad., Leop.-Car., lii, pp. 257-284, with pls. ix-xvi.

Wilder, B. G. 1871 A

Mastodon remains in central New York.

Amer. Jour. Sci. (3), ii, p. 58.

A brief note.

Wilder, B. G.—Continued. 1880 A

Some recent American papers in comparative anatomy.

Science (John Michels, editor), i, pp. 322–323.

Wildermuth, H. A. 1877 A

Der feinere Bau der lufthaltigen Vogelknochen nebst Beiträgen zur Kenntniss ihrer Entwicklung.

Jenaische Zeitschr. Naturwiss., xi (o. s.), pp. 537–550, with pl. xxxvi.

Willemoes-Suhm, Rudolph. 1869 A

Ueber *Cœlacanthus* und einige verwandte Gattungen.

Palæontographica, xvii, pp. 73–88, with pls. x–xi.

Williams, Henry S. 1882 A

Note on some fish-remains from the Upper Devonian rocks in New York State.

Proc. Amer. Assoc. Adv. Sci., 30th meeting, Cincinnati, 1881, pp. 192–193.

Describes *Dipterus ithacensis*.

—— 1887 A

On the fossil faunas of the Upper Devonian, the Genesee section, New York.

Bull. U. S. Geol. Surv. No. 41, pp. 1–104, with pls. i–iv.

—— 1891 A

On the plates of *Holonema rugosa.*

Proc. Amer. Assoc. Adv. Sci., 39th meeting, Indianapolis, 1890, p. 337.

—— 1892 A

The scope of palæontology and its value to geologists.

Proc. Amer. Assoc. Adv. Sci., 41st meeting, Rochester, 1892, pp. 149–170.

Vice-presidential address before Amer. Assoc. Adv. Sci., 1892.

—— 1893 A

On the ventral plates of the carapace of the genus *Holonema* of Newberry.

Amer. Jour. Sci. (3), xlvi, 285–288, with figs. in the text.

Williams, Herbert Upham. 1886 A

Notes on the fossil fishes of the Genesee and Portage black shales.

Bull. Buffalo Soc. Nat. Sci., v, pp. 81–84, with 1 pl.

Williamson, W. C. 1837 A

On the affinity of some fossil scales of fish from the Lancashire Coal measures with those of the recent *Salmonidæ.*

Lond. and Edinb. Philos. Mag. and Jour. Sci. (3), xi, pp. 300–301, with pl. ii.

The scales here described and figured are now referred to *Rhizodopsis sauroides.*

Williamson, W. C.—Continued. 1849 A

On the microscopic structure of the scales and dermal teeth of some Ganoid and Placoid fishes.

Philos. Trans. Roy. Soc. Lond., 1849, pp. 435–475; pls. 40–43.

Williston, S. W. 1878 A

American Jurassic dinosaurs.

Trans. Kansas Acad. Sci., vi, pp. 42–46.

—— 1890 A

Structure of the plesiosaurian skull.

Science, xvi, p. 262.

—— 1890 B

Structure of the plesiosaurian skull.

Science, xvi, p. 290.

—— 1890 C

Note on the pelvis of *Cumnoria* (*Camptosaurus.*)

Amer. Naturalist, xxiv, pp. 472–473.

—— 1890 D

A new plesiosaur from the Niobrara Cretaceous of Kansas.

Trans. Kansas Acad. Sci., xii, pp. 174–178, with 2 figs. in the text.

Describes and figures *Cimoliosaurus* (*Elasmosaurus?*) *snowi.*

Noticed by Cope, Amer. Naturalist, xxv, p. 653.

—— 1891 A

Kansas mosasaurs.

Science, xviii, p. 345.

—— 1891 B

The skull and hind extremity of *Pteranodon.*

Amer. Naturalist, xxv, pp. 1124–1126.

—— 1892 A

Kansas pterodactyls. Part I.

Kansas Univ. Quarterly, i, pp. 1–13, pl. i.

Contains list of species, with description of the osteology of *Pteranodon* and *Nyctodactylus.*

A brief abstract of this paper is found in Amer. Naturalist, xxvii, p. 37.

—— 1893 A

An interesting food habit of the plesiosaurs.

Trans. Kansas Acad. Sci., xiii, pp. 121–122, with plate.

Refers to the occurrence of pebbles in the stomachs of plesiosaurs.

—— 1893 B

Kansas pterodactyls. Part II.

Kansas Univ. Quarterly, ii, pp. 79–81, with 1 fig. in the text.

—— 1893 C

Kansas mosasaurs. Part II. Restoration of *Clidastes.*

Kansas Univ. Quarterly, ii, pp. 83–84, with pl. iii.

Williston, S. W.—Continued. 1894 A

A food habit of the plesiosaurs.

Amer. Naturalist, xxviii, p 50.

Extract from Trans. Kansas Acad. Sci., xiii, p. 121.

—— 1894 B

Vertebrate remains from the lowermost Cretaceous.

Kansas Univ. Quarterly, iii, pp. 1–4, with pl. i.

—— 1894 C

Restoration of *Platygonus*.

Kansas Univ. Quarterly, iii, pp. 23–39, with pls. vii, viii, and 7 text figs.

Notice of, by M. Schlosser, in Archiv f. Anthrop., xxiv, p. 171.

—— 1894 D

A new turtle from the Benton Cretaceous.

Kansas Univ. Quarterly, iii, pp. 5–18, with pls. ii–iv, with 9 text-figs.

Describes as belonging to new family, genus, and species, *Desmatochelys lowii*.

—— 1894 E

Restoration of *Aceratherium fossiger* Cope.

Kansas Univ. Quarterly, ii, pp. 289–290, pl. viii.

—— 1894 F

A new Dicotyline mammal from the Kansas Pliocene.

Science, xxiii, p. 164.

Describes *Dicotyles leptorhinus* Williston.

—— 1895 A

New or little-known extinct vertebrates.

Kansas Univ. Quarterly, iii, pp. 165–176.

Abstract by M. Schlosser in Archiv f. Anthrop., xxv, p. 183.

—— 1895 B

Note on the mandible of *Ornithostoma*.

Kansas Univ. Quarterly, iv, p. 61.

—— 1896 A

On the dermal coverings of *Hesperornis*.

Kansas Univ. Quarterly, v, pp. 53–54, with pl. ii.

—— 1896 B

On the skull of *Ornithostoma*.

Kansas Univ. Quarterly, iv, pp. 195–197, with pl. i.

Ornithostoma is adopted instead of *Pteranodon* Marsh.

—— 1897 A

Restoration of *Ornithostoma* (*Pteranodon*).

Kansas Univ. Quarterly, vi, pp. 35–51, with pl. ii, and 4 figs. in the text.

Williston, S. W.—Continued. 1897 B

Notice of some vertebrate remains from the Kansas Permian.

Kansas Univ. Quarterly, vi, pp. 53–56, with 2 figs. in the text.

See also Science (2), v, p. 395, and Trans. Kansas Acad. Sci., xv, pp. 120–122.

—— 1897 C

A new plesiosaur from the Kansas Comanche Cretaceous.

Kansas Univ. Quarterly, vi, p. 57.

Description of *Plesiosaurus gouldii* n. sp.

—— 1897 D

Brachysaurus, a new genus of mosasaurs.

Kansas Univ. Quarterly, vi, pp. 95–98, with pl. viii.

Description of *Brachysaurus overtoni* gen. et sp. nov.

—— 1897 E

On the extremities of *Tylosaurus*.

Kansas Univ. Quarterly, vi, pp. 99–102, with pls. ix–xii, and 1 fig. in the text.

One of the plates shows the scaled condition of the skin of *Tylosaurus*.

—— 1897 F

Range and distribution of the mosasaurs, with remarks on synonymy.

Kansas Univ. Quarterly, vi, pp. 177–185, with pl. xx.

—— 1897 G

A new labyrinthodont from the Kansas Carboniferous.

Kansas Univ. Quarterly, vi, pp. 209–210, with pl. xxi.

—— 1897 H

The Kansas Niobrara Cretaceous.

Univ. Geol. Surv. Kansas, ii, pp. 235–246.

Contains a brief account of the genera of vertebrates found in this group of deposits.

—— 1897 I

The Pleistocene of Kansas.

Univ. Geol. Surv. Kansas, ii, pp. 299–308, with pls.

—— 1897 J

Restoration of Kansas Mosasaurs.

Kansas Univ. Quarterly, vi, A, pp. 107–110, with pl. xiii.

—— 1898 A

Restoration of Kansas Cretaceous animals.

Kansas Univ. Quarterly, vii.

Frontispiece restoration of *Clidastes* is given.

—— 1898 B

Birds.

Univ. Geol. Surv. Kansas, iv, pp. 43–53, with pls. v–viii.

This is a synopsis of the fossil birds of Kansas.

Williston, S. W.—Continued. 1898 C

Dinosaurs.

Univ. Geol. Surv. Kansas, iv, pp. 67–70, with pl. ix.

A brief exposition of the characters of the group and a plate of *Claosaurus annectens*, to illustrate the structure of the Kansan species, *C. agilis*.

—— 1898 D

Crocodiles.

Univ. Geol. Surv. Kansas, iv, pp. 75–78, with 2 figs. in the text.

—— 1898 E

Mosasaurs.

Univ. Geol. Surv. Kansas, iv, pp. 83–221, with pls. x–lxxii and 5 figs. in the text.

—— 1898 F

The sacrum of *Morosaurus*.

Kansas Univ. Quarterly, vii, pp. 173–175, with 2 figs. in the text.

—— 1898 G

Miocene Edentates.

Science (2), viii, p. 132.

Shows that Cope's *Caryoderma snovianum* is a *Testudo*, possibly *T. undata* Cope.

—— 1898 H

Editorial notes.

Kansas Univ. Quarterly, vii, A, p. 235.

Note on nuchal fringe and scales of *Platecarpus*.

—— 1898 I

The Pleistocene of Kansas.

Trans. Kansas Acad. Sci., xv, pp. 90–94.

Presents an annotated list of the Pleistocene vertebrates found in Kansas. A reprint of Williston, S. W., 1897 I.

—— 1898 J

Notice of some vertebrate remains from the Kansas Permian.

Trans. Kansas Acad. Sci., xv, pp. 120–122.

—— 1898 K

Saber-toothed cats.

Pop. Sci. Monthly, liii, pp. 348–351, with 1 text-fig.

—— 1899 A

Some additional characters of the mosasaurs. Contributions from the palæontological laboratory, No. 42.

Kansas Univ. Quarterly, viii, A, pp. 39–41.

Describes the episternum and nuchal fringe in *Platecarpus*. Also shows that the food is principally fishes.

—— 1899 B

A new genus of fishes from the Niobrara Cretaceous.

Kansas Univ. Quarterly, viii, pp. 113–115, with pl. xxvi.

Williston, S. W.—Continued 1899 C

The red-beds of Kansas.

Science (2), ix, p. 221.

Records the finding of *Eryops megacephalus* in the above beds.

—— 1899 D

A new species of *Sagenodus* from the Kansas Coal-measures.

Kansas Univ. Quarterly, viii, pp. 175–181, with pls. xxviii, xxxv–xxxvii.

—— 1899 E

Notes on the coraco-scapula of *Eryops* Cope.

Kansas Univ. Quarterly, viii, pp. 185–186, with pls. xxvii, xxix, xxx.

—— 1900 A

Some fish-teeth from the Kansas Cretaceous.

Kansas Univ. Quarterly, ix, pp. 27–42, with pls. vi–xiv.

—— 1900 B

Cretaceous fishes [of Kansas]. Selachians and Pycnodonts.

Univ. Geol. Surv. Kansas, vi, pp. 237–256, with pls. xxiv–xxxii.

This is a reprint of the preceding paper.

Willeston, S. W., and **Case**, E. C. 1892 A

Kansas mosasaurs.

Kansas Univ. Quarterly, i, pp. 15–32, with pls. ii–vi.

Gives list of species and describes the osteology of *Clidastes velox* and *C. westii* n. sp.

—— —— 1898 A

Turtles. Introduction, and *Desmatochelys*, by S. W. Williston. *Toxochelys*, by E. C. Case.

Univ. Geol. Surv. Kansas, iv, pp. 349–387, with pls. lxxiii–lxxxiv, with 1 series of text figs.

Willett, Henry.

See **Etheridge** and **Willett**.

Wilson, J. T., and **Hill**, J. P. 1897 A

Observations upon the development and succession of the teeth in *Perameles*, together with a contribution to the discussion of the homologies of the teeth in marsupial animals.

Quart. Jour. Micros. Sci. (2), xxxix, pp. 427–588, with pls. xxv–xxxii.

Wilson, Thomas. 1892 A

Man and the *Mylodon*.

Amer. Naturalist, xxvi, pp. 628–631.

Presents results of chemical analysis of bones of man and *Mylodon*, found together.

Winchell, Alex. 1863 A

Description of elephantine molars in the museum of the University of Michigan.

Canadian Naturalist, 1863, viii, pp. 398–400.

—— 1864 A

Notice of the remains of a mastodon recently discovered in Michigan.

Amer. Jour. Sci. (2), xxxviii, pp. 223–224.

See also Canadian Naturalist, 1893, p. 398.

Winckler, T. C. 1869 A

Des tortues fossiles conservées dans le Musée Teyler et dans quelques autres musées.

Arch. Mus. Teyler, ii, pp. i–ii; 1–151, with pls. i–xxxiii.

—— 1871 A

Mémoire sur le *Cœlacanthus harlemensis*.

Arch. Mus. Teyler, iii, pp. 101–116, with pl. iv.

Notice and review of, by W. D[awkins] in Geol. Magazine, 1872, pp. 31–32.

—— 1873 A

Le *Plesiosaurus dolichodeirus* Conyb.

Arch. Mus. Teyler, iii, pp. 219–233, with pl. vi, and 10 figs. in the text.

—— 1874 A

Le *Pterodactylus kochii* Wagn. du Musée Teyler.

Archiv. Mus. Teyler, iii, pp. 377–387, with pl. vii.

—— 1874 B

Mémoire sur des dents de poissons du terrain bruxellian.

Arch. Mus. Teyler, iii, pp. 295–304, with pl. vii.

Windle, B. C. A., and **Humphreys**, John. 1887 A

On man's lost incisors.

Report Brit. Assoc. Adv. Sci., 56th meeting, Birmingham, 1886, pp. 688–691.

Abstract; full paper in Jour. Anat. and Physiol., xxi, p. 84.

Winge, Herluf. 1888 A

Jordfundne og nulevende Gnavere (*Rodentia*) fra Lagoa, Minas Geraes, Brasilien.

E Museo Lundii, i, Art. iii, pp. 1–200, with pls. i–viii.

Abstract of, by M. Schlosser, in Archiv f. Anthrop., xix, pp. 89–90.

—— 1893 A

Jordfundne og nulevende Flagermus (*Chiroptera*) fra Lagoa Santa, Minas Geraes, Brasilien. Med Udsigt over Flagermusenes indbyrdes Slægtskab.

E Museo Lundii, ii, pp. 1–65, with pls. 1, ii. Kjöbenhavn, 1893.

Abstract of, by M. Schlosser, in Archiv f. Anthrop., xxiv, pp. 142–143.

—— 1893 B

Chauves-souris fossiles et vivantes de Lagoa Santa, Minas Geraes, Brésil.

E Museo Lundii, ii, pp. 67–92.

—— 1893 C

Jordfundne og nulevende Pungdyr (*Marsupialia*) fra Lagoa Santa, Minas Geraes, Brasilien. Med Udsigt over Pungdyrenes Slægtskab.

E Museo Lundii, ii, pt. ii, pp. 1–182, with pls. i–iv.

Abstract of, by M. Schlosser, in Archiv f. Anthrop., xxiv, pp. 143–145.

—— 1895 A

Jordfundne og nulevende Aber (*Primates*) fra Lagoa Santa, Minas Geraes, Brasilien. Med Udsigt over Abernes indbyrdes Slægtskab.

E Museo Lundii, ii, pt. iii, pp. 1–45, with pls. i–ii.

Abstract of, by M. Schlosser, in Archiv f. Anthrop., xxv, pp. 238–239.

—— 1895 B

Jordfundne og nulevende Rovdyr (*Carnivora*) fra Lagoa Santa, Minas Geraes, Brasilien. Med Udsigt over Rovdyrenes indbyrdes Slægtskab.

E Museo Lundii, ii, pt. iv, pp. 1–103, with pls. i–viii. Kjöbenhavn, 1895.

Notice of this paper by M. Schlosser in Neues Jahrb. Mineral., 1899, ii, pp. 144–147, and in Archiv f. Anthrop., xxv, pp. 239–241.

Winslow, C. F. 1857 A

Letter on finding human remains and those of elephant and mastodon in California.

Proc. Boston Soc. Nat. Hist., vi, p. 278.

—— 1868 A

On human remains along with those of the mastodon in the drift of California.

Amer. Jour. Sci. (2), xlvi, pp. 407–408.

Taken from Proc. Boston Soc. Nat. Hist., vi, 1857, p. 278.

Wislizenus, A. 1858 A

Was man contemporaneous with the mastodon?

Trans. Acad. Sci. St. Louis, i, pp. 168–171.

Wistar, Caspar. 1799 A

A description of the bones deposited by the president in the museum of the society, and represented in the annexed plates.

Trans. Amer. Philos. Soc., iv, pp. 526–531, with 2 pls.

Description of bones of *Megalonyx* deposited by the president of the society, Thomas Jefferson.

—— 1818 A

An account of two heads found in the morass called the Big Bone Lick and presented to the society by Mr. Jefferson.

Trans. Amer. Philos. Soc. (2), i, pp. 375–380, with pls. x, xi.

Mentions bones of mammoth and mastodon, and figures bones of extinct deer and ox.

Woodhull, Alfred A. 1872 A

On the elephant in Colorado.

Amer. Jour. Sci. (3), iii, p. 374.

Reports occurrence of *E. americanus* in Colorado.

Woodward, A. S. 1884 A

Chapter on fossil sharks and rays.

Hardwicke's Science-Gossip, xx, pp. 172–174; 227–230; 267–272, with figs. 99–101; 129–143; 161–177.

—— 1885 A

On the literature and nomenclature of British fossil *Crocodilia*.

Geol. Magazine (3), ii, pp. 496–510.

Contains a list of papers on the subject.

—— 1885 B

Chapters on fossil sharks and rays.

Hardwicke's Science-Gossip, xxi, pp. 106–109; 154–156; 226–229; 270–272, with figs. 71–84; 101–111; 155–161; 181–188.

These articles form a continuation of the paper 1884 A. 1886 E is the conclusion.

—— 1886 A

On the relations of the mandibular and hyoid arches in a Cretaceous shark (*Hybodus dubrisiensis* Mackie).

Proc. Zool. Soc. Lond., 1886, pp. 218–224, pl. xx.

—— 1886 B

Note on the presence of a columella (epipterygoid) in the skull of *Ichthyosaurus*.

Proc. Zool. Soc. Lond., 1886, pp. 405–408, woodcuts 1–4.

—— 1886 C

On the palæontology of the selachian genus *Notidanus*.

Geol. Magazine (3), iii, pp. 205–217; 253–259, with pl. vi and 2 figs. in the text.

Woodward, A. S.—Continued. 1886 D

The history of fossil crocodiles.

Proc. Geologists' Assoc., ix, pp. 288–344, with 25 figs. in the text.

—— 1886 E

Chapters on fossil sharks and rays.

Hardwicke's Science-Gossip, xxii, pp. 4–6, with figs. 1, 2.

This forms the conclusion of the papers of this author designated 1884 A and 1885 B.

—— 1887 A

On the presence of a canal system, evidently sensory, in the shields of Pteraspidian fishes.

Proc. Zool. Soc. Lond., 1887, pp. 478–481, with 1 woodcut.

—— 1887 B

On the dentition and affinities of the selachian genus *Ptychodus* Agassiz.

Quart. Jour. Geol. Soc., xliii, pp. 121–131, with pl. x.

—— 1887 C

On "leathery turtles," recent and fossil, and their occurrence in British Eocene deposits.

Proc. Geologists' Assoc., x, pp. 2–14.

Contains numerous references to the literature of the subject.

—— 1888 A

[Note on J. S. Newberry's paper "On the structure and relations of *Edestus*, with a description of a gigantic new species," published in Ann. N. Y. Acad. Sci., v, 1888, pp. 1–10.]

Geol. Magazine (3), v, p. 374.

—— 1888 B

Note on Prof. W. Dames's "Die Gattung *Saurodon*," published in Sitzungsb. Ges. naturf. Freunde, Berlin, 1887.

Geol. Magazine (3), v, p. 158.

—— 1888 C

M. Charles Brongniart on *Pleuracanthus*.

Geol. Magazine (3), v, pp. 422–425.

Review of paper published in Comptes rend. Acad. Sci. Paris, April 23, 1888.

—— 1888 D

Note on the occurrence of a species of *Onychodus* in the lower Old Red sandstone passage beds of Ledbury, Herefordshire.

Geol. Magazine (3), v, pp. 500–501.

Woodward, A. S.—Continued. 1888 E

Dr. Anton Fritsch on *Ctenodus* and other Palæozoic fishes.

Geol. Magazine (3), v, pp. 523–526.

A review of Fauna der Gaskohle, etc., Bd. ii, Heft 3, pp. 65–92.

—— 1888 F

Notes on the determination of the fossil teeth of *Myliobatis*, with a revision of the English Eocene species.

Ann. and Mag. Nat. Hist. (6), i, pp. 36–47, with pl. i.

—— 1888 G

On the fossil fish-spines named *Cœlorhynchus*, Agassiz.

Ann. and Mag. Nat. Hist. (6), ii, pp. 223–226.

—— 1888 H

On some remains of the extinct selachian *Asteracanthus* from the Oxford clay of Peterborough, preserved in the collection of Alfred N. Leeds, esq., of Eyebury.

Ann. and Mag. Nat. Hist. (6), ii, pp. 336–342, with pl. xii.

Strophodus probably referable to *Asteracanthus*.

—— 1888 I

A synopsis of the vertebrate fossils of the English Chalk.

Proc. Geologists' Assoc., x, pp. 273–338, with pl. i.

—— 1888 J

On a head of *Hybodus delabechei*, associated with dorsal fin-spines, from the Lower Lias of Lyme Regis, Dorsetshire.

Annual Report Yorkshire Philos. Soc., 1888, pp. 58–61, with pl. i.

—— 1889 A

A comparison of the Cretaceous fish-fauna of Mount Lebanon with that of the English Chalk.

Report Brit. Assoc. Adv. Sci., 58th meeting, Bath, 1888, p. 678.

—— 1889 B

Remarks on *Sclerorhynchus atavus*.

Proc. Zool. Soc. Lond., 1889, pp. 449–451, with 1 woodcut.

Describes an extinct saw-fish from Mount Lebanon.

—— 1889 C

Note on *Bucklandium diluvii*, König, a siluroid fish from the London clay of Sheppey.

Proc. Zool. Soc. Lond., 1889, pp. 208–210, with pl. xxii.

Woodward, A. S.—Continued. 1889 D

Catalogue of the fossil fishes in the British Museum. Part I. Containing the *Elasmobranchii*.

London, 1889, pt. 1, pp. i–xlvii; 1–474, pls. i–xvii, woodcuts 13.

See notice of this volume in Geol. Magazine, vi, 1889, p. 366.

—— 1889 E

Prof. Dr. Von Zittel on palæichthyology.

Geol. Magazine (3), vi, pp. 125–130; 177–181; 227–232.

A review of Dr. Zittel's Handbuch der Palæontologie.

—— 1889 F

Palæichthyological notes. I. On the so-called *Hybodus keuperinus*, Murch. & Strickl. II. On *Diplodus moorei*, sp. nov., from the Keuper of Somersetshire. III. On a symmetrical Hybodont tooth from the Oxford clay of Peterborough. IV. On a maxilla of *Saurichthys* from the Rhætic of Aust Cliff, near Bristol.

Ann. and Mag. Nat. Hist. (6), iii, pp. 297–302, with pl. xiv.

—— 1889 G

Acanthodian fishes from the Devonian of Canada.

Ann. and Mag. Nat. Hist. (6), iv, pp. 183–184.

—— 1889 H

On the palæontology of sturgeons.

Proc. Geologists' Assoc., xi, pp. 24–44, with pl. i, and 13 figs. in the text.

—— 1890 A

Vertebrate palæontology in some American and Canadian museums.

Geol. Magazine (3), vii, pp. 390–395; 455–460.

—— 1890 B

A new theory of *Pterichthys*.

Ann. and Mag. Nat. Hist. (6), vi, pp. 314–316.

Notice of paper by W. Patten in Quart. Jour. Micros. Sci., xxxi, 1890, pp. 317–378.

—— 1890 C

A synopsis of the fossil fishes of the English lower Oolites.

Proc. Geologists' Assoc., xi, pp. 285–306, with pl. iii.

—— 1890 D

The fossil fishes of the Hawkesbury series at Gosford, New South Wales.

Mem. Geol. Surv. N. S. Wales, Palæont., No. 4, pp. 1–55, with pls. i–x. Sydney, 1890.

Abstract in Ann. and Mag. Nat. Hist. (6), vi, p. 423.

Woodward, A. S.—Continued. 1891 A

Catalogue of the fossil fishes in the British Museum. Part II. Containing the *Elasmobranchii* (*Acanthodii*), *Holocephali*, *Ichthyodorulites*, *Ostracodermi*, *Dipnoi*, and *Teleostomi* (*Crossopterygii*), and chondrostean *Actinopterygii*.

Pp. i–xliv; 1–567, pls. i–xvi and 57 text figs.

—— 1891 B

Dr. Anton Fritsch on Palæozoic elasmobranch fishes.

Geol. Magazine (3), viii, pp. 375–378, with 2 figs.

A review of Dr. Fritsch's Fauna der Gaskohle, etc.

—— 1891 C

Armored palæozoic sharks.

Geol. Magazine (3), viii, pp. 422–425.

A review of three of Dr. Otto Jaekel's papers on Elasmobranchs.

—— 1891 D

Review of "Pineal fontanelle of Placoderms and catfish" by Bashford Dean in 19th Report of the Commissioners of Fisheries of N. Y., 1891.

Geol. Magazine (3), viii, p. 513.

—— 1892 A

On the Lower Devonian fish-fauna of Campbelltown, New Brunswick.

Geol. Magazine (3), ix, pp. 1–6, pl. i.

Describes *Protodus jexi* gen. et spec. nov., *Diplodus problematicus* sp. nov., *Gyracanthus incurvus*, *Acanthodes semistriatus*, *Cephalaspis campbelltonensis*, *Phlyctænaspis acadica*.

—— 1892 B

Palæozoic fishes.

Geol. Magazine (3), ix, pp. 233–235.

Review of Professor Cope's "On the characters of some Palæozoic fishes" and Rohon's "Ueber *Pterichthys*."

—— 1892 C

Further contributions to knowledge of the Devonian fish-fauna of Canada.

Geol. Magazine (3), ix, pp. 481–485; pl. xiii, and 1 fig. in text.

Treats of *Phlyctænaspis acadica*, *Diplacanthus horridus*, sp. nov., *Coccosteus canadensis*, sp. nov., and *Bothriolepis*.

—— 1892 D

On the skeleton of a Chimæroid fish (*Ischyodus*) from the Oxford clay of Christian Malford, Wiltshire.

Ann. and Mag. Nat. Hist. (6), ix, pp. 94–96.

—— 1892 E

The evolution of fins.

Natural Science, i, pp. 28–35, with 8 figs. in the text.

Woodward, A. S.—Continued. 1892 F

The forerunners of the backboned animals.

Natural Science, i, pp. 596–602, with 10 figs.

—— 1892 G

The evolution of shark's teeth.

Natural Science, i, pp. 671–675, with 12 figs. in the text.

—— 1893 A

On the cranial osteology of the Mesozoic ganoid fishes, *Lepidotus* and *Dapedius*.

Geol. Magazine (3), x, pp. 413–414.

See Woodward, A. S., 1893 D.

—— 1893 B

The fossil fishes of the British Coal-measures.

Geol. Magazine (3), x, pp. 72–74.

A review of James W. Davis's paper on *Pleuracanthidæ* in Trans. Roy. Dublin Soc., iv, pp. 703–748, 1892.

—— 1893 C

Note on a case of subdivision of the median fin in a dipnoan fish.

Ann. and Mag. Nat. Hist. (6), xi, pp. 241–242, with 1 fig. in the text.

Describes method of separation of the anal fin of *Phaneropleuron curtum* from the caudal by fusion of the axonosts.

—— 1893 D

On the cranial osteology of the Mesozoic ganoid fishes, *Lepidotus* and *Dapedius*.

Proc. Zool. Soc. Lond., 1893, pp. 559–565, with pls. xlix and l, and 6 figs. in the text.

—— 1893 E

Note on the evolution of the scales of fishes.

Natural Science, iii, pp. 448–450, with figures.

—— 1894 A

On the affinities of the Cretaceous fish *Protosphyræna*.

Ann. and Mag. Nat. Hist. (6), xiii, pp. 510–512.

Shows the close relationships existing between *Protosphyræna* and *Hypsocormus*.

—— 1894 B

Note on a tooth of *Oxyrhina* from the Red Crag of Suffolk.

Geol. Magazine (4), i, pp. 75–76, with 2 figs. in the text.

Refers to the finding of *Oxyrhina crassa*.

—— 1895 A

Catalogue of the fossil fishes in the British Museum. Part III. Contain-

Woodward, A. S.—Continued.

ing the actinopterygian *Teleostomi* of the order *Chondrostei* (concluded), *Protospondyli*, *Aētheospondyli*, and *Isospondyli* (in part).

Pp. i-xliii, 1-544, pls. i-xviii, text figs. 45.

Review of, by R. H. Traquair in Geol. Magazine, 1896, p. 124.

—— 1895 B

The problem of the primeval sharks.

Natural Science, vi, pp. 38-48, with 3 figs. in the text.

—— 1895 C

On two deep-bodied species of the clupeoid genus *Diplomystus*.

Ann. and Mag. Nat. Hist. (6), xv, pp. 1-3, with pl. i, figs. 1-4.

Describes and figures *Diplomystus longicostatus* and describes *D. birdi* n. sp.

—— 1895 D

On the fossil fishes of the Upper Lias of Whitby. Part I.

Proc. Yorkshire Geol. and Polytech. Soc. (2), xiii, pp. 25-42, with pls. iii-v.

Leptolepis saltviciensis, *Pholidophorus germanicus*, *Eugnathus fasciculatus*, and *Ptycholepis bollensis* are described and figured.

—— 1895 E

The fossil fishes of the Talbragar beds (Jurassic?).

Mem. Geol. Surv. N. S. Wales, Palæont., No. 9, pp. 1-29, with pls. i-vi.

—— 1896 A

Review of Bashford Dean's "Fishes, living and fossil."

Geol. Magazine (3), iii, pp. 135-139.

—— 1896 B

On some extinct fishes of the Teleostean family *Gonorhynchidæ*.

Proc. Zool. Soc. Lond., 1896, pp. 500-504, with pl. xviii.

—— 1896 C

On some remains of the pycnodont fish *Mesturus*, discovered by Alfred N. Leeds, esq., in the Oxford Clay of Peterborough.

Ann. and Mag. Nat. Hist. (6), xvii, pp. 1-15, with pls. i-iii.

—— 1897 A

On the fossil fishes of the Upper Lias of Whitby. Part II.

Proc. Yorkshire Geol. and Polytech. Soc. (2), xiii, pp. 155-170, with pls. xix-xxi.

Describes *Caturus* sp. indet. and 3 species of *Pachycormus*.

Woodward, A. S.—Continued. 1898 A

On the fossil fishes of the Upper Lias of Whitby. Part III.

Proc. Yorkshire Geol. and Polytech. Soc. (2), xiii, pp. 325-337, with pls. xlvi-xlviii.

Describes and figures species of *Lepidotus*, and treats of their osteology.

—— 1898 B

Outlines of vertebrate palæontology for students of zoology. By Arthur Smith Woodward, assistant keeper of the department of geology in the British Museum, Cambridge.

University Press, 1898, pp. i-xxiv; 1-470, with 228 figs. in the text.

Reviewed by H. F. Osborn in Natural Science, xiv, 1899, pp. 156-159.

—— 1899 A

Notes on teeth of sharks and skates from the English Eocene formations.

Proc. Geologists' Assoc., xvi, pp. 1-14, with pl. i.

—— 1899 B

On the fossil fishes of the Upper Lias of Whitby. Part IV.

Proc. Yorkshire Geol. and Polytech. Soc. (2), xiii, pp. 455-472, with pls. lxviii, lxix, and 13 text figs.

Describes and figures *Belonorhynchus acutus*, *B. brevirostris*, and *Gyrosteus mirabilis*.

—— 1900 A

On some fish remains from the Parana formation, Argentine Republic.

Ann. and Mag. Nat. Hist. (7), vi, pp. 1-7, with pl. i.

—— 1900 B

On a new ostracoderm (*Euphanerops longævus*) from the Upper Devonian of Scaumenac Bay, Province of Quebec, Canada.

Ann. and Mag. Nat. Hist. (7), v, pp. 416-418, with pl. x, figs. 1-1*b*.

—— 1900 C

On a new species of *Deltodus* from the Lower Carboniferous (Yoredale rocks) of Yorkshire.

Ann. and Mag. Nat. Hist. (7), v, pp. 419-420, with pl. x, figs. 2-2*b*.

—— 1900 D

Doctor Traquair on Silurian fishes.

Geol. Magazine (4), vii, pp. 66-72, with 4 figs. in the text.

A review of Traquair's Report on fossil fishes, etc., in Trans. Roy. Soc. Edinburgh, xxxix, pp. 827-864, pls. i-v, and 18 text-figs.

Woodward, A. S. and **Sherborn,** C. D. 1890 A

A catalogue of British fossil *Vertebrata.*

Pp. i–xxxv, 1–396. 8vo, London.

Table of contents: Introduction, p. v. Dates of publication of Agassiz's "Poisson fossiles," p. xxv. Dates of publication of Owen's "Odontography," p. xxx. Table of the stratigraphical distribution of British fossil *Vertebrata,* p. xxx. Catalogue of British fossil *Vertebrata,* pp. 1–311. Addenda and Corrigenda, p. 395.

Woodward, Henry. 1869 A

Man and the mammoth; being an account of the animals associated with early man in prehistoric times.

Geol. Magazine (1), vi, pp. 58–72.

—— 1871 A

Seeley on the *Ornithosauria.*

Nature, iv, p. 100.

A review of H. G. Seeley's two works, here designated as Seeley, H. G., 1869 A, and Seeley, H. G., 1870 A.

—— 1874 A

New facts bearing on the inquiry concerning forms intermediate between birds and reptiles.

Report Brit. Assoc. Adv. Sci., 43d meeting, Bradford, 1873, pp. 93–94.

—— 1874 B

New facts bearing on the inquiry concerning forms intermediate between birds and reptiles.

Quart. Jour. Geol. Soc., xxx, pp. 8–15.

—— 1884 A

Ueber *Archæopteryx* von W. Dames.

Geol. Magazine (3), i, pp. 418–424, with pl. xiv.

A review of W. Dames's work in Palæont. Abhandl., ii, 1884, pp. 117–196.

—— 1885 A

On an almost perfect skeleton of *Rhytina gigas* (*Rhytina stelleri,* Steller's sea-cow), obtained by Mr. Robert Damon, F. G. S., from the Pleistocene peat-bogs of Bering Island.

Quart. Jour. Geol. Soc., xli, pp. 457–472, with 5 figs. in the text.

Contains a list of works on *Sirenia.*

—— 1885 B

Iguanodon mantelli Meyer.

Geol. Magazine (3), ii, pp. 10–15, with pl. i.

—— 1885 C

On "wingless birds," fossil and recent; and a few words on birds as a class.

Geol. Magazine (3), ii, pp. 308–318.

Woodward, Henry—Continued. 1885 D

On the fossil *Sirenia* in the British Museum (Natural History), Cromwell Road, S. W.

Geol. Magazine (3), ii, pp. 412–425, with 2 figs. in the text.

—— 1886 A

On a remarkable ichthyodorulite from the Carboniferous series, Gascoyne, Western Australia.

Geol. Magazine (3), iii, pp. 1–7, pl. i, and 5 figs. in the text.

Describes *Edestus davisii.*

—— 1886 B

Prof. E. D. Cope on a new type of perissodactyl ungulate from the Wasatch Eocene of Wyoming Territory, United States of North America.

Geol. Magazine (3), iii, pp. 49–52, with pl. ii.

Extracts from Professor Cope's descriptions of *Phenacodus.*

—— 1886 C

On "flightless birds," commonly called "wingless birds," fossil and recent; and a few words on birds as a class.

Proc. Geologists' Assoc., ix, pp. 352–376, with pls. i and ii, and 20 figs. in the text.

—— 1894 A

Remarks on paper read by Dr. G. M. Dawson on elephant remains in Alaska.

Quart. Jour. Geol. Soc., l, p. 9.

—— 1895 A

Note on the reconstruction of *Iguanodon* in the British Museum (Natural History), Cromwell Road.

Geol. Magazine (4) ii, pp. 289–292, pl. x, and 2 figs. in the text.

Woodward, M. F. 1892 A

On the milk dentition of *Procavia* (*Hyrax*) *capensis* and of the rabbit (*Lepus cuniculus*), with remarks on the relation of the milk and permanent dentition of the *Mammalia.*

Proc. Zool. Soc. Lond., 1892, pp. 38–49 with pl. ii.

—— 1893 A

Contributions to the study of mammalian dentition. Part I. On the development of the teeth of the *Macropodidæ.*

Proc. Zool. Soc. Lond., 1893, pp. 450–473, with pls. xxxv–xxxvii.

Appended is a list of references to papers by other authors.

Review by M. Schlosser in Archiv f. Anthrop., xxiv, p. 145.

Woodward, M. F.—Continued. 1894 A

On the milk dentition of the *Rodentia*, with a description of a vestigial milk incisor in the mouse (*Mus musculus*).

Anatom. Anzeiger, ix, pp. 619–631, with 3 figs. in the text.

—— 1896 A

Contributions to the study of mammalian dentition. Part II. On the teeth of certain *Insectivora*.

Proc. Zool. Soc. Lond., 1896, pp. 557–594, with pls. xxiii–xxvi.

Appended is a list of references to 32 papers bearing on the subject.

An abstract in Archiv f. Anthrop., xxv, pp. 242–243.

—— 1896 B

On the teeth of the *Marsupialia*, with especial reference to the pre-milk dentition.

Anatom. Anzeiger, xiii, pp. 281–291.

Review by M. Schlosser in Archiv f. Anthrop., xxv, pp. 243–244.

Woodworth, J. B. 1895 A

Three-toed dinosaur tracks in the Newark group at Avondale, N. J.

Amer. Jour. Sci. (3), l, pp. 481–482.

—— 1900 A

Vertebrate footprints on Carboniferous shales of Plainville, Mass.

Bull. Geol. Soc. America, xi, pp. 449–454, with pl. xl and 2 text-figs.

Records finding of batrachian footprints.

—— 1900 B

Glacial origin of older Pleistocene in Gay Head cliffs, with note on fossil horse of that section.

Bull. Geol. Soc. Amer., xi, pp. 455–460, with pls. xli, xlii.

Records finding of an astragalus of *Equus* in reputed Miocene beds.

Woolworth, Samuel. 1847 A

Description of a tooth of the *Elephas americanus*.

Amer. Jour. Agricult. and Sci., vi, pp. 31–37, with 2 figs. in the text.

Worthen, A. H. 1857 A

On the occurrence of fish remains in the Carboniferous limestone of Illinois.

Proc. Amer. Assoc. Adv. Sci., 10th meeting, Albany, 1856, pp. 189–191.

—— 1871 A

Vertical range of the mammoth and mastodon.

Amer. Naturalist, v, pp. 606–607.

See also **St. John and Worthen; Newberry and Worthen.**

Wortman, J. L. 1882 A

Remarks on *Ursus amplidens*.

Proc. Acad. Nat. Sci. Phila., 1882, pp. 286–288.

—— 1882 B

On the origin and development of the existing horses.

Kansas City Review of Science and Industry, v, pp. 719–726, with figs. 1–6; vi, pp. 67–75, figs. 7–22.

—— 1883 A

L'origine du cheval.

Revue Scientifique (3), v, pp. 705–714, with text-figs. 125–144.

—— 1883 B

Remarks on *Galera macrodon*.

Amer. Naturalist, xvii, p. 1001.

Remarks made before Acad. Nat. Sci. Phila., April 26, 1883. These remarks do not appear in the "Proceedings" for that month.

—— 1885 A

Cope's Tertiary *Vertebrata*.

Amer. Jour. Sci. (3), xxx, pp. 295–299.

—— 1886 A

The comparative anatomy of the teeth of the *Vertebrata*.

8vo, pp. 351–504, with pls. i–vi and text figs. 189–268.

Reprinted from "The American System of Dentistry." Contains many figures of North American fossil vertebrates.

—— 1890 A

Human and animal remains.

Amer. Naturalist, xxiv, pp. 592–594.

Contains directions for collecting and preserving fossil remains.

—— 1893 A

On the divisions of the White River, or Lower Miocene, of Dakota.

Bull. Amer. Mus. Nat. Hist., v, pp. 95–105.

Contains a list of the genera characteristic of each of the different beds.

—— 1893 B

A new theory of the mechanical evolution of the metapodial keels of *Diplarthra*.

Amer. Naturalist, xxvii, pp. 421–434, with 5 figs. in the text.

—— 1894 A

Osteology of *Patriofelis*, a Middle Eocene creodont.

Bull. Amer. Mus. Nat. Hist., vi, pp. 129–164, with pl. i and 5 figs. in the text.

Reviewed by M. Schlosser in Archiv f. Anthrop., xxv, pp. 184–185.

Wortman, J. L.—Continued. 1894 B

On the affinities of *Leptarctus primus* of Leidy.

Bull. Amer. Mus. Nat. Hist., vi, pp. 229–231.

—— 1895 A

On the osteology of *Agriochœrus*.

Bull. Amer. Mus. Nat. Hist., vii, pp. 145–178, with pl. i and 24 figs. in the text.

Reviewed by M. Schlosser in Archiv f. Anthrop., xxv, p. 185.

—— 1896 A

Species of *Hyracotherium* and allied perissodactyls from the Wasatch and Wind River beds of North America.

Bull. Amer. Mus. Nat. Hist., viii, pp. 81–110, with pl. ii and 18 figs. in the text.

Remarks on, by M. Schlosser in Neues Jahrb. Mineral., 1899, ii, pp. 139–142 and in Archiv f. Anthrop., xxv, pp. 221–222.

—— 1896 B

Psittacotherium, a member of a new and primitive suborder of the *Edentata*.

Bull. Amer. Mus. Nat. Hist., viii, pp. 259–262.

The suborder *Ganodonta* established.

—— 1897 A

[Abstract of remarks on *Ganodonta*, made before New York Academy of Sciences, Dec. 7, 1896.]

Science (2), v, p. 71.

—— 1897 B

The *Ganodonta* and their relationship to the *Edentata*.

Bull. Amer. Mus. Nat. Hist., ix, pp. 59–110, with 36 figs. in the text.

Abstracts of this and Wortman, J. L., 1896 B, by M. Schlosser in Archiv f. Anthrop., xxvi, pp. 179–181.

—— 1898 A

The extinct *Camelidæ* of North America, and some associated forms.

Bull. Amer. Mus. Nat. Hist., x, pp. 93–142, with pl. xi and 23 text figs.

—— 1899 A

Restoration of *Oxyæna lupina* Cope, with descriptions of certain new species of Eocene creodonts.

Bull. Amer. Mus. Nat. Hist., xii, pp. 139–148, with pl. vii and 8 figs. in the text.

See also **Cope and Wortman**; **Osborn and Wortman.**

Wortman, J. L., and **Earle**, Charles. 1893 A

Ancestors of the tapir from the Lower Miocene of Dakota.

Bull. Amer. Mus. Nat. Hist., v, pp. 159–180, with 7 text figs.

Notice in Amer. Naturalist, xxviii, p. 466.

Wortman, J. L., and **Matthew**, W. D. 1899 A

The ancestry of certain members of the *Canidæ*, the *Viverridæ* and *Procyonidæ*.

Bull. Amer. Mus. Nat. Hist., xii, pp. 109–139, with pl. vi and 10 text figs.

Wright, Albert A. 1893 A

On the ventral armor of *Dinichthys*.

Report Geol. Surv. Ohio, vii, pp. 620–626 with pl. xliv and 2 text figs.

—— 1894 A

The ventral armor of *Dinichthys*.

Amer. Geologist, xiv, pp. 313–320, with pl. ix and 2 text figs.

Wright, R. R. 1884 A

The relationship between the air bladder and auditory organ in *Amiurus*.

Zoolog. Anzeiger, vii, pp. 248–252.

Wylie, T. A. 1859 A

Teeth and bones of *Elephas primigenius*, lately found near the western fork of White River, in Monroe County, Ind.

Amer. Jour. Sci. (2), xxviii, pp. 283–284.

Wyman, Jeffries. 1845 A

Communication on skeleton of *Hydrarchos sillimani*.

Proc. Boston Soc. Nat. Hist., ii, pp. 65–68.

Refers the skeleton shown by Dr. Koch to *Dorudon* and probably to *Zeuglodon*.

—— 1846 A

[Remarks on *Castoroides ohioensis* found in Wayne County, N. Y.]

Proc. Boston Soc. Nat. Hist., ii, pp. 138–139.

—— 1846 B

An anatomical description of the cranium [of *Castoroides ohioensis*].

Boston Jour. Nat. Hist., v, pp. 391–401, with pls. xxxvii–xxxix.

This constitutes a portion of a joint paper by the above author and Dr. James Hall. See Hall, James, 1846 B.

—— 1850 A

Notice of fossil bones from the neighborhood of Memphis, Tenn.

Amer. Jour. Sci. (2), x, pp. 56–64, with 5 figs. in the text.

—— 1850 B

Notice of remains of vertebrated animals found at Richmond, Va.

Amer. Jour. Sci. (2), x, pp. 228–235, with 1 page of figs.

—— 1850 C

Remarks on teeth of fossil fishes from Richmond, Va.

Proc. Boston Soc. Nat. Hist., iii, pp. 246–247.

Teeth belonging to genus *Phyllodus*.

Wyman, Jeffries—Continued. 1850 D

Remarks on finding of bones of *Megalonyx*, *Castor*, and *Castoroides* at Memphis, Tenn.

Proc. Boston Soc. Nat. Hist., iii, pp. 280-281.

—— 1850 E

Remarks on zeuglodon bones shown by Dr. Durkee.

Proc. Boston Soc. Nat. Hist., iii, pp. 328-329.

—— 1853 A

Description of the interior of the cranium and of the form of the brain of *Mastodon giganteus*.

Amer. Jour. Sci. (2), xv, pp. 48-55, with 3 outline figs.

—— 1853 B

[Remarks on mastodon tooth found about 40 miles west of Chicago, and on teeth of mammoth.]

Proc. Boston Soc. Nat. Hist., iv, pp. 376-378.

—— 1853 C

Notes on the reptilian remains.

Quar. Jour. Geol. Soc., ix, pp. 64-66, with pls. ii, iii.

Discusses the structure and relationships of the bones of *Dendrerpeton acadianum*.

—— 1855 A

Notice of fossil bones from the red sandstone of the Connecticut Valley.

Amer. Jour. Sci. (2), xx, pp. 394-397.

No systematic names employed.

—— 1855 B

Fossil footprints.

Proc. Boston Soc. Nat. Hist., v. p. 258. Also in Amer. Jour. Sci. (2), xxi, 1856, p. 446.

—— 1855 C

Description of a portion of the lower jaw of *Mastodon andium* of Cuvier; also of a tooth and fragment of the femur of a mastodon, brought from Chile by Lieut. J. M. Gilliss, U. S. N.

Exec. Doc. No. 121, 33d Cong., 1st sess.: The U. S. Naval Astron. Exped. to the Southern Hemisphere during the years 1849-1852, Lieut. J. M. Gilliss, supt., vol. ii, pp. 275-281, with pls. xii, xiii.

—— 1856 A

Account of some fossil bones collected in Texas.

Proc. Boston Soc. Nat. Hist., vi, pp. 51-55.

Describes some bones of *Elephas*, *Mastodon*, and *Megatherium*.

—— 1857 A

Notes on the teeth of an elephant discovered near Zanesville, Ohio.

Proc. Amer. Assoc. Adv. Sci., 10th meeting, Albany, 1856, pp. 169-172.

Wyman, Jeffries—Continued. 1857 B

On a batrachian reptile from the Coal formation.

Proc. Amer. Assoc. Adv. Sci., 10th meeting, Albany, 1856, pp. 172-173.

For more complete descriptions and names of the species, see Wyman, J. 1858 A.

—— 1858 A

On some remains of batrachian reptiles discovered in the Coal formation of Ohio, by Dr. J. S. Newberry and C. M. Wheatley.

Amer. Jour. Sci. (2), xxv, pp. 158-163, with 2 figs. in the text.

Abstract in Zeitschr. gesammt. Naturwiss., xiii, pp. 71-72, 1859.

—— 1860 A

Exhibition of skull of capybara found fossil on the southwestern frontier of the United States.

Proc. Boston Soc. Nat. Hist., vii, p. 350.

—— 1862 A

Observations upon the remains of extinct and existing species of *Mammalia* found in the crevices of the lead-bearing rocks and in the superficial accumulations within the lead region of Wisconsin, Iowa, and Illinois.

J. D. Whitney's Report Geol. Surv. Upper Miss. Lead Region, pp. 421-423.

—— 1867 A

Remarks on finding of bones of great auk on Goose Island, Casco Bay.

Proc. Boston Soc. Nat. Hist., xi, pp. 301-303.

—— 1872 A

The osteology and myology of *Didelphys virginiana*, with an appendix on the brain.

Mem. Boston Soc. Nat. Hist., ii, pp. 41-154, with 36 figs. in the text.

Yates, L. G. 1874 A

Fossil elephant and mastodon in California.

Amer. Jour. Sci. (3), viii, p. 143.

—— 1874 B

Letter relating to mammalian fossils in California.

Proc. Acad. Nat. Sci. Phila., 1874, pp. 18-21.

Young, John. 1866 A

On the affinities of *Platysomus* and allied genera.

Quart. Jour. Geol. Soc., xxii, pp. 301-317, with pls. xx, xxi, and 4 figs. in the text.

Restriction and definition of *Platysomus* Ag.

Young, John—Continued. 1866 B

Notice of new genera of Carboniferous *Glyptodipterines*.

Quart. Jour. Geol. Soc., xxii, pp. 596-608, with 8 figs. in the text.

Defines *Rhizodus* Owen.

Zigno, A de. 1887 A

Quelques observations sur les siréniens fossiles.

Bull. Soc. Géol. France (3), xv, pp. 728-732, pl. xxvii.

Zilliken, J. E. 1879 A

Die Entstehung des Kamelhöckers.

Kosmos, vi, pp. 143-145.

Zittel, Karl A. 1882 A

Ueber Flugsaurier aus dem lithographischen Schiefer Bayerns.

Palæontographica, xxix, 47-81, with pls. x-xiii (i-iv).

—— 1886 A

Ueber *Ceratodus*.

Sitzungsber. k. p. Akad. Wissensch. München., 1886, pp. 253-261, with plate.

—— 1890 A

Handbuch der Palæontologie. I. Abth. Palæozologie. III Band. *Vertebrata* (*Pisces*, *Amphibia*, *Reptilia*, *Aves*).

Pp. i-xii; 1-900, with 719 illus. Munich and Leipsic, 1887-1890.

Pp. i-xii; 1-256 were issued in 1887; pp. 257-436 in 1888; pp. 437-632 in 1889; pp. 633-900 in 1890.

Zittel, Dr. Karl A.—Continued. 1893 A

The geological development, descent, and distribution of the *Mammalia*.

Geol. Magazine (3), x, pp. 401-412, 455-468, 501-514.

—— 1893 B

Handbuch der Palæontologie. I. Abth. Palæozologie. IV Band. *Vertebata* (*Mammalia*).

Pp. i-xi, 1-799, with 590 figs. in the text. Munich and Leipsic, 1891-1893.

—— 1896 A

Fossil fishes in the British Museum.

Natural Science, viii, pp. 408-413.

A review of the first three volumes of A. S. Woodward's "Catalogue of the fossil fishes in the British Museum."

Zograf, N. 1896 A

Note sur l'odontographie des Ganoïdei Chondrostei.

Ann. Sci. Naturelles (8) Zool., i, pp. 197-219, with pls. iv, v.

Zwick, Wilhelm. 1897 A

Beiträge zur Kenntniss des Baues und der Entwicklung der Amphibiengliedmassen, besonders von Carpus und Tarsus.

Zeitschr. wissensch. Zool., lxiii, pp. 62-114, with pls. iv, v.

A list of the principal memoirs and papers dealing with the subject is appended.

ADDENDUM.

Ballou, William H. 1898 A

The serpent-like sea saurians.

Pop. Sci. Month., liii, pp. 209-225, with 2 pls. and 6 text figs.

Baur, G. 1892 D

Der Carpus der Schildkröten.

Anatom. Anzeiger, vii, pp. 206-211, with figs. 1-4.

Cope, E. D. 1877 AA

Verbal communication on a new locality of the Green River shales containing fishes, insects, and plants in a good state of preservation.

Palæont. Bull. No. 25, p. 1.

This appears to have been a communication made to the American Philosophical Society, but it does not appear in the proceedings. It contains a list of the fishes obtained, some general remarks on their relationships, but no descriptions. "Published August 3, 1877."

Lucas, F. A. 1890 B

Description of some bones of Pallas cormorant (*Phalacrocorax perspicillatus*).

Proc. U. S. Nat. Mus., xii, pp. 88-94, with pls. ii-iv.

—— 1890 C

The expedition to Funk Island, with observations upon the history and anatomy of the great auk.

Rep. U. S. Nat. Mus., 1887-1888, pp. 493-529, with pls. lxxi-lxxiii.

Rohon, J. V. 1899 A

Die Devonischen Fische von Timan in Russland.

Sitzungsber. k. böhm. Gesellsch. Wissensch., math.-naturw. Cl., 1899, art. viii, pp. 1-77, with 45 text figs.

—— 1899 B

Ueber Parietalorgane und Paraphysen.

Sitzungsber. k. böhm. Gesellsch. Wissensch., math.-naturw. Cl., 1899, art. xxxiii, pp. 1-15, with 6 text figs.

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Garman, S. 1885 B, p. 30.
Cope, E. D. 1883 K, p. 108 (Didymodus in part, to replace Diplodus, preoccupied by Rafinesque).
1884 A. (Didymodus.)
1884 B. (Didymodus.)
1884 N. (Didymodus.)
1884 U. (Didymodus.)
1884 CC. (Didymodus.)
1885 P. (Didymodus.)
1894 F, p. 436. (Didymodus).
Davis, J. W. 1885 A. (Didymodus.)
1892 A, p. 709. (Syn. of Pleuracanthus.)
Fritsch, A. 1895 A (1890), p. 46. (Orthacanthus.)
Garman, S. 1884 B. (Diplodus.)
1885 A. (Diplodus.)
Gill, T. 1884 A. (Didymodus.)
Goldfuss, A. 1847 A, p. 23, pl. v, figs. 9–11. (Orthacanthus.)
Jaekel, O. 1894 A, p. 103. (Didymodus.)
Koken, E. 1889 A, pp. 87 (Pleuracanthus); p. 91 (Triacranodus).
Woodward, A. S. 1889 D, p. 15 (Diacranodus).
1890 A, p. 394. (Didymodus.)
1898 B, p. 32. (Didymodus.)
Zittel, K. A. 1890 A, p. 90. (Didymodus.)

Diacranodus platypternus (Cope).

Cope, E. D. 1884 N, p. 587, figs. 8, 9. (Didymodus.)
1884 CC, p. 818, pl. xxiii. (Didymodus.)
1888 BB, p. 285. (Didymodus.)
Garman, S. 1885 B, p. 30. (Diacranodus.)
Permian; Texas.

Diacranodus texensis (Cope).

Cope, E. D. 1883 K, p. 108. (Didymodus? compressus Newb.)
Case, E. C. 1900 A, p. 701, pl. i, figs. 5*a*–5*d*. [Pleuracanthus (Didymodus).]
Cope, E. D. 1884 N, pp. 573, 575. (Diplodus compressus Cope, not of Newberry.)
1884 CC, p. 818, pl. xxiii. (Didymodus compressus.)
1885 D, p. 406. (Pleuracanthus compressus.)
1888 BB, p. 285. (Didymodus.)
Garman, S. 1885 B, p. 30. (Diacranodus compressus.)
Woodward, A. S. 1889 D, p. 15. (Didymodus.)
Permian; Texas, Illinois.

DITTODUS Owen. Type, none assigned; *D. divergens* Owen = *Diplodus gibbosus* Agassiz may be taken.

Owen, R. 1867 B, p. 325, pl. i.

Unless otherwise indicated, the following writers designate this genus by the name *Diplodus*. This name is, however, preoccupied.

Agassiz, L. 1843 B, iii, p. 204. (Diplodus, type *D. gibbosus*. Name preoccupied by Rafinesque, 1810.)
1844 A.
Barkas, T. P. 1868 B.
1874 A, pp. 344, 346.
Cope, E. D. 1883 K, p. 108. (Didymodus in part.)
1884 A.
1884 B.
1884 N.
Davis, J. W. 1880 A, p. 349.
1880 B, p. 321.
1885 A. (Syn. of Pleuracanthus.)
1892 A, p. 705. (Syn. of Pleuracanthus.)
Destinez, P. 1898 A, p. 219.
Eastman, C. R. 1899 C, p. 483.
Egerton, P. G. 1857 B.
Garman, S. 1884 B.
Gill, T. 1884 A.
Hasse, C. 1879 A, p. 67.
Hay, O. P. 1899 E, p. 791. (Dittodus.)
Jaekel, O. 1885 A, p. 78.
Kner, R. 1867 A.
Koken, E. 1889 A.
Miller, S. A. 1889 A, p. 596.
1892 A, p. 714. (Dissodus, type *D. gibbosus*.)
Newberry, J. S. 1873 A, pp. 285, 333, 334.
1875 A, p. 44.
Owen, R. 1867 B, p. 325 (Dittodus); p. 359 (Aganodus); p. 346 (Ochlodus); p. 363 (Pternodus).
Pictet, F. J. 1854 A, p. 259.
Stock, T. 1882 B.
Thompson, J. 1871 A. (Dittodus.)
Ward, J. 1890 A, p. 138.
Woodward, A. S. 1885 B, p. 155.
1889 D, pp. 2, 12. (Pleuracanthus, Diplodus.)
1889 F, p. 299.
1898 B, p. 33. (Diplodus.)
Woodward and Sherborn 1890 A, p. 66.
Zittel, K. A. 1890 A, p. 90.

Dittodus acinaces (Dawson).

Dawson, J. W., 1860 B, suppl. p. 46, fig. 43. (Diplodus.)
1868 D, p. 11. (Diplodus.)
1868 A, p. 211, fig. 58. (Diplodus.)
1878 A, p. 211, fig. 58. (Diplodus.)
1894 A, p. 269. (Diplodus.)
Miller, S. A. 1892 A, p. 714. (Dissodus.)
Woodward, A. S. 1889 D, p. 13. (Diplodus.)
Coal-measures; Nova Scotia.

Dittodus compressus (Newb.).

Newberry, J. S., 1856 A, p. 99. (Diplodus.)
Cope, E. D. 1877 N, p. 53. (Diplodus.)
1881 K, p. 163. (Diplodus.)
Hay, O. P. 1900 A, p. 16.
Kindle, E. M. 1898 A, p. 484.
Miller, S. A. 1892 A, p. 714. (Dissodus.)
Newberry, J. S. 1873 A, pp. 334, 335. (Diplodus.)
1875 A, p. 44, pl. lviii, fig. 2. (Diplodus.)
1889 A, p. 214. (Diplodus.)
Newberry and Worthen 1866 A, p. 60, pl. iv, fig. 2. (Diplodus.)
St. John, O. 1872 A, p. 240, pl. iv, figs. 19*a*, 19*b*. (Diplodus.)
St. John and Worthen 1870 A, p. 432. (Diplodus.)
Woodward, A. S. 1889 D, p. 12. (Diplodus.)
Coal-measures; Indiana, Ohio.

Dittodus gibbosus (Binney).

Binney, E. W., 1841, Trans. Manchester Geol. Soc., i, p. 169, pl. v, figs. 17–18. (Diplodus.)
Agassiz, L. 1843 B, iii, p. 204, pl. 226, fig. 1. (Diplodus gibbosus; not figs. 2–5, *fide* Woodward); p. 205, pl. 226, figs. 6–8. (Diplodus minutus.)
Cope, E. D. 1884 N, p. 573. (Diplodus.)[1]
Davis, J. W. 1892 A, p. 725. (Pleuracanthus lævissimus.)
Hancock and Atthey 1868 A, p. 370. (Diplodus.)
Miller, S. A. 1892 A, p. 714. (Dissodus.)
Owen, R. 1867 B, p. 325, pl. i. (Dittodus parallelus.)[2]
Woodward, A. S. 1889 D, p. 10. (Diplodus.)
Coal-measures; England: Permian; Texas.

Dittodus gracilis (Newb.).

Newberry, J. S., 1856 B, p. 99. (Diplodus.)
Miller, S. A. 1892 A, p. 714. (Dissodus.)
Newberry, J. S. 1873 A, pp. 334, 336. (Diplodus.)
1875 A, p. 44, pl. lviii, figs. 3, 3*a*. (Diplodus.)
1889 A, p. 214. (Diplodus.)
Woodward, A. S. 1889 D, p. 13. (Diplodus.)
Coal-measures; Ohio.

Dittodus latus (Newb.).

Newberry, J. S., 1856 B, p. 99. (Diplodus.)
Destinez, P. 1898 A, p. 220.
Hay, O. P. 1900 A, p. 96.
Kindle, E. M. 1898 A, p. 484.
Miller, S. A. 1892 A, p. 714. (Dissodus.)
Newberry, J. S. 1873 A, pp. 334, 336. (Diplodus.)
1875 A, p. 44, pl. lviii, figs. 1–1*b*. (Diplodus.)
Newberry and Worthen 1866 A, p. 59, pl. iv, figs. 1–1*e*. (Diplodus.)
Woodward, A. S. 1889 D, p. 12. (Diplodus.)
Coal-measures; Indiana, Ohio, Illinois, Belgium.

Dittodus lucasi Hay.

Hay, O. P., 1900 A, p. 97, fig. 1.
Coal-measures; Illinois.

Dittodus penetrans (Dawson).

Dawson, J. W., 1860 B, suppl., p. 50, fig. 42. (Diplodus.)
1868 A, p. 211, fig. 57. (Diplodus.)
1878 A, p. 211, fig. 57. (Diplodus.)
Miller, S. A. 1892 A, p. 714. (Dissodus.)
Woodward, A. S. 1889 D, p. 14. (Diplodus.)
Coal-measures; Nova Scotia.

Dittodus priscus (Eastman).

Eastman, C. R., 1899 C, p. 490, pl. vii, figs. 1, 2. (Diplodus.)
Weller, S. 1899 A. (Diplodus.)
Devonian; Illinois.

Dittodus striatus (Eastman).

Eastman, C. R., 1899 C, p. 490, pl. vii, figs. 3, 4. (Diplodus.)
Weller, S. 1899 A. (Diplodus.)
Devonian; Illinois.

PROTODUS A. S. Woodward. Type *P. jexi* A. S. Woodward.

Woodward, A. S., 1892 A, p. 1.
Eastman, C. R. 1899 C, p. 489.
Miller, S. A. 1892 A, p. 717.
Traquair, R. H. 1893 A, p. 145.
1898 D, p. 111.

Protodus jexi (A. S. Woodward).

Woodward, A. S., 1892 A, p. 2, pl. 1, fig. 1.
Traquair, R. H. 1893 A, p. 145.
Lower Devonian; New Brunswick.

THRINACODUS St. J. and Worth. Type *T. nanus* St. J. and Worthen.

St. John and Worthen, 1875 A, p. 289.
Cope, E. D. 1884 B. (Thrinacodus.)
1884 N. (Pleuracanthus.)
Davis, J. W. 1892 A, p. 705. (Syn. of Pleuracanthus.)
Gill, T. 1884 A.
Koken, E. 1889 A, p. 87. (Pleuracanthus.)
Miller, S. A. 1889 A, p. 613.
Zittel, K. A. 1890 A, p. 90. (Syn. of Diplodus.)
Probably not distinct from *Dittodus*.

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[1] Cope's Texan specimens may belong to some other species.
[2] See, however, Woodward, A. S. 1891 A, p. 354.

Thrinacodus bicornis Newb.

Newberry, J. S., 1879 A, p. 344.
Kindle, E. M. 1898 A, p. 485.
Woodward, A. S. 1889 D, p. 14. (Diplodus.)
Subcarboniferous (St. Louis); Indiana.

Thrinacodus duplicatus (Newb. and Worth.).

Newberry and Worthen, 1866 A, p. 61, pl. iv, figs. 3, 3*a*. (Diplodus.)
Destinez, P. 1898 A, p. 220. (Diplodus.)
Keyes, C. R. 1891 A, p. 264. (Thrinacodus duplicatus?)
Lesley, J. P. 1890 A, p. 1186, figures.
1895 A, pl. dlxxii.
St. John and Worthen 1875 A, p. 289. (Thrinacodus.)
Woodward A. S. 1889 D, p. 14. (Diplodus.)
Subcarboniferous (Keokuk); Illinois, Belgium.

Thrinacodus incurvus (Newb. and Worth.).

Newberry and Worthen, 1866 A, p. 62, pl. iv, figs. 4, 4*a*. (Diplodus.)
Lesley, J. P. 1890 A, p. 1186.
St. John and Worthen 1875 A, p. 289.
Woodward, A. S. 1889 D, p. 14. (Diplodus.)
Subcarboniferous (Keokuk); Illinois.

Thrinacodus nanus St. J. and Worth.

St. John and Worthen, 1875 A, p. 289, pl. v, figs. 1, 2.
Woodward A. S. 1889 D, p. 14. (Diplodus.)
Subcarboniferous (Kinderhook); Iowa.

DOLIODUS Traquair. Type *Diplodus problematicus* A. S. Woodward.

Traquair, R. H., 1893 A, p. 145.
Eastman, C. R. 1899 C, p. 489.
Traquair, R. H. 1893 D, p. 112.

Doliodus problematicus (A. S. Woodward).

Woodward, A. S. 1892 A, p. 2, pl. i, fig. 2. (Diplodus.)
Miller, S. A. 1892 A, p. 714. (Dissodus.)
Traquair, R. H. 1893 A, p. 145.
1893 D, p. 112.
Lower Devonian; New Brunswick.

CLADODONTIDÆ.

Brown, C. 1900 A, p. 174.
Claypole, 1893 B.
1895 C.
1895 D.
Cope, E. D. 1893 L.
1894 F, p. 427.
1898 B, p. 23.
Garman, S. 1885 A ("Cladodonts").
1885 B. ("Cladodonts.")
Gill, T. 1884 B, p. 346. (Hybodontidæ, in part.)
Nicholson and Lydekker 1889 A, p. 927.
Woodward, A. S. 1889 D, p. 16.

CLADODUS Agassiz. Type *C. mirabilis* Agassiz.

Agassiz, L. 1843 B, iii, p. 196.
1844 A.
Barkas, W. J. 1873 A, p. 19.
1874 A, pp. 386, 392, 438.
Brown, C. 1900 A, p. 172.
Claypole, E. W. 1893 B.
1893 D.
1895 C.
1895 H.
Cope, E. D. 1893 L.
1893 O.
1894 F.
Davis, J. W. 1883 A, p. 372.
1885 A.
Dean, B. 1894 A.
Eastman, C. R. 1899 C, p. 489.
1900 B, p. 35.
Emery, C. 1897 B, p. 147.
Gadow, H. 1898 A, p. 5.
Garman, S. 1885 B.
Hasse, C. 1879 A, p. 69.
Jaekel, O. 1892 A.
1899 A, p. 295.
Koken, E. 1889 A, p. 92.
Koninck, L. G. de 1878 A, p. 26.
Kükenthal, W. 1892 A.
Lesley, J. P. 1889 A, p. 130.
McCoy, F. 1855 A, p. 619.
Miller, S. A. 1889 A, p. 590.
Newberry and Worthen 1866 A, p. 20.
Nicholson and Lydekker 1889 A, p. 927.
Pictet, F. J. 1854 A, p. 258.
Reis, O. 1896 A, p. 212.
St. John and Worthen 1875 A, p. 432.
Steinmann and Döderlein 1890 A, p. 546.
Thompson, J. 1870 A.
1871 A.
Traquair, R. H. 1888 A, p. 81.
1900 B, p. 517.
Trautschold, H. 1874 B, p. 286.
Woodward, A. S. 1884 A, p. 267.
1889 D, p. 16.
Woodward and Sherborn 1890 A, p. 34.
Zittel, K. A. 1890 A, p. 67.

Cladodus acuminatus Newb.

Newberry, J. S. 1856 B, p. 99.
Miller, S. A. 1889 A, p. 590, fig. 1110.
Newberry, J. S. 1875 A, p. 45, pl. lviii, fig. 4.
Woodward, A. S. 1889 D, p. 23.
Coal-measures; Ohio.

Cladodus alternatus St. J. and Worth.

St. John and Worthen 1875 A, p. 265, pl. ii, figs. 14-18.
Koninck, L. G. de 1878 A, p. 29.
Woodward, A. S. 1889 D, pp. 22, 23.
Subcarboniferous (Kinderhook, Burlington); Iowa.

Cladodus angulatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 24, pl. i, figs. 7-8a.
Woodward, A.S. 1889 D, p. 21. (Syn. of C. robustus.)
Subcarboniferous (Keokuk); Illinois.

Cladodus bellifer St. J. and Worth.

St. John and Worthen 1875 A, p. 270, pl. iv, fig. 10.
Koninck, L. G. de 1878 A, p. 27, pl. iii, fig. 4.
Sauvage, H. E. 1888 A, p. 47.
Woodward, A. S. 1889 D, p. 23.
Subcarboniferous (Burlington); Iowa.

Cladodus carinatus St. J. and Worth.

St. John and Worthen 1875 A, p. 279, pl. iv, figs. 6, 7.
Woodward, A. S. 1889 D, p. 23.
Coal-measures; Illinois, Iowa.

Cladodus claypolei Hay.

Hay, O. P. 1899 E, p. 783.
Claypole, 1894 A, p. 137, pl. v. (C. magnificus, not of Tuomey, 1858.)
Devonian (Cleveland shale); Ohio.

Cladodus concinnus Newb.

Newberry, J. S. 1875 A, p. 48, pl. lviii, fig. 8.
1889 A, p. 170, pl. xxi.
Woodward, A. S. 1889 D, p. 23.
Devonian (Cleveland shale); Ohio.

Cladodus coniger Hay.

Hay, O. P. 1899 E, p. 783.
Miller, S. A. 1892 A, p. 714. (C. carinatus.)
Newberry, J. S. 1889 A, p. 103. (C. carinatus, not of St. John and Worthen.)
Devonian (Chemung); Pennsylvania.

Cladodus costatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 27, pl. i, figs. 13, 13*a*.
Woodward, A. S. 1889 D, p. 23.
Subcarboniferous (Chester); Illinois.

Cladodus deflexus Newb. and Worth.

Newberry and Worthen 1870 A, p. 355, pl. iii, figs. 3, 3*a*.
Woodward, A. S. 1889 D, p. 23.
Subcarboniferous (Burlington); Illinois.

Cladodus eccentricus St. J. and Worth.

St. John and Worthen 1875 A, p. 272, pl. iv, fig. 4.
Keyes, C. R. 1894 A, p. 229.
Woodward, A. S. 1889 D, p. 23.
Subcarboniferous (St. Louis); Illinois, Missouri.

Cladodus elegans Newb. and Worth.

Newberry and Worthen 1870 A, p. 354, pl. iv, fig. 9.
Keyes, C. R. 1894 A, p. 229.
Woodward, A. S. 1889 D, p. 23.
Subcarboniferous (St. Louis); Missouri.

Cladodus euglypheus St. J. and Worth.

St. John and Worthen 1875 A, p. 274, pl. iv, figs. 1-3.
Keyes, C. R. 1894 A, p. 229.
Woodward, A. S. 1889 D, p. 24.
Subcarboniferous (St. Louis); Illinois, Missouri, Iowa.

Cladodus exiguus St. J. and Worth.

St. John and Worthen 1875 A, p. 261, pl. iii, figs. 13-15.
Woodward, A. S. 1889 D, p. 24.
Subcarboniferous (Kinderhook); Iowa.

Cladodus exilis St. J. and Worth.

St. John and Worthen 1875 A, p. 256, pl. i figs. 1-6.
Woodward, A. S. 1889 D, p. 24.
Subcarboniferous (Kinderhook); Iowa.

Cladodus ferox Newb. and Worth.

Newberry and Worthen 1866 A, p. 26, pl. i, fig. 11.
Hambach, G. 1890 A, p. 80.
Woodward, A. S. 1889 D, p. 24.
Subcarboniferous (St. Louis); Missouri.

Cladodus fulleri St. J. and Worth.

St. John and Worthen 1875 A, p. 276, pl. iv, fig. 9
Woodward, A. S. 1889 D, p. 24.
Coal-measures; Illinois, Iowa.

Cladodus girtyi Hay.

Hay, O. P. 1900 A, p. 98, fig. 2.
Coal-measures; Colorado.

Cladodus gomphoides St. J. and Worth.

St. John and Worthen 1875 A, p. 269, pl. iv, figs. 12-16.
Woodward, A. S. 1889 D, p. 24.
Subcarboniferous (Burlington); Iowa.

Cladodus gracilis Newb. and Worth.

Newberry and Worthen 1866 A, p. 30, pl. i, fig. 17.
Kindle, E. M. 1898 A, p. 484.
Trautschold, H. 1874 B, p. 287.
Woodward, A. S. 1889 D, p. 24.
Coal-measures; Indiana.

Cladodus grandis Newb. and Worth.

Newberry and Worthen 1866 A, p. 29, pl. i, figs. 15, 15*a*.
Woodward, A. S. 1889 D, p. 21.
Subcarboniferous (Chester); Illinois.

Cladodus hertzeri Newb.

Newberry, J. S. 1875 A, p. 46, pl. lviii, fig. 5.
Woodward, A. S. 1889 D, p. 24.
Subcarboniferous (below Berea Grit); Ohio.

Cladodus intercostatus St. J. and Worth.

St. John and Worthen 1875 A, p. 267, pl. iv, fig. 11.
Woodward, A. S. 1889 D, p. 24.
Subcarboniferous (Burlington): Iowa, Illinois.

Cladodus ischypus Newb. and Worth.

Newberry and Worthen 1870 A, p. 354, pl. iv, figs. 6, 6*a*.
Woodward, A. S. 1889 D, p. 24.
Subcarboniferous (St. Louis): Missouri.

Cladodus keokuk St. J. and Worth.

St. John and Worthen 1875 A, p. 268.
Woodward, A. S. 1889 D, p. 24.
Subcarboniferous (Keokuk); Iowa, Illinois.

Cladodus lamnoides Newb. and Worth.

Newberry and Worthen 1866 A, p. 30, pl. i, fig. 16.
Trautschold, H. 1874 B, p. 286, text figure and pl. xxviii, fig. 3; pl. xxix, fig. 2.
Woodward, A. S. 1889 D, pp. 22, 24.
Subcarboniferous (Keokuk); Illinois. Also reported from Russia.

Cladodus magnificus Tuomey.

Toumey, M. 1858 A, p. 39, figs. C, C*b*.
Newberry, J. S. 1889 A, p. 216.
Newberry and Worthen 1866 A, p. 24, pl. i, figs. 6, 6*a*.
Subcarboniferous; Alabama, Illinois, Iowa.

Cladodus micropus Newb. and Worth.

Newberry and Worthen 1866 A, p. 21, pl. i, figs. 2, 2*b*.
Woodward, A. S. 1889 D, p. 21. (Syn. of C. robustus.)
Subcarboniferous (Keokuk); Illinois.

Cladodus monroei Eastman.

Eastman, C. R. 1900 B, p. 86, fig. 2.
Devonian (Hamilton); Ohio.

Cladodus mortifer Newb. and Worth.

Newberry and Worthen 1866 A, p. 22, pl. i, fig. 5.
Newberry, J. S. 1897 A, p. 285, pl. xxii, figs 2, 2*a*.
St. John, O. 1870 A, p. 431.
1872 A, p. 239, pl. iii, figs. 6*a*–*b*; pl. vi, figs. 13*a*–13*d*.
Woodward, A. S. 1889 D, p. 24. (Syn. of C. occidentalis.)
Coal-measures; Illinois, Indiana, Iowa, Nebraska, Kansas.

Cladodus newmani Tuomey.

Toumey, M. 1858 A, p. 39, fig. B.
Newberry, J. S. 1889 A, p. 216.
Subcarboniferous; Alabama.

Cladodus occidentalis Leidy.

Leidy, J. 1859 C, p. 3.
1873 B, pp. 311, 352, pl. xvii, figs. 4–6.
Woodward, A. S. 1889 D, p. 24.
Coal-measures; Kansas.

Cladodus pandatus St. J. and Worth.

St. John and Worthen 1875 A, p. 278, pl. iv, fig. 8.
Woodward, A. S. 1889 D, p. 25.
Coal-measures; Illinois.

Cladodus parvulus Newb.

Newberry, J. S. 1875 A, p. 48, pl. lviii, figs. 9, 9*a*.
Woodward, A. S. 1889 D, p. 25.
Devonian; Ohio.

Cladodus pattersoni Newb.

Newberry, J. S. 1875 A, p. 47, pl. lviii, figs. 6, 6*a*.
1889 A, p. 171.
Woodward, A. S. 1889 D, p. 25.
Subcarboniferous (Waverly); Ohio, Kentucky.

Cladodus politus Newb. and Worth.

Newberry and Worthen 1866 A, p. 27, pl. i, fig. 12.
Woodward, A. S. 1889 D, p. 25.
Subcarboniferous (Chester); Illinois.

Cladodus praenuntius St. J. and Worth.

St. John and Worthen 1875 A, p. 270, pl. iv, fig. 17.
Woodward, A. S. 1889 D, p. 25.
Subcarboniferous (Burlington); Iowa.

Cladodus raricostatus St. J. and Worth.

St. John and Worthen 1875 A, p. 271, pl. iv, fig. 18.
Woodward, A. S. 1889 D, p. 25.
Subcarboniferous (Keokuk); Iowa.

Cladodus rivi-petrosi Claypole.

Claypole, E. W. 1893 B, p. 328, pl. viii.
1893 D, p. 445, fig. 1.
Devonian (Cleveland shale); Ohio.

Cladodus robustus Newb. and Worth.

Newberry and Worthen 1866 A, p. 20, pl. i, figs. 1, 1*a*.
Woodward, A. S. 1889 D, pp. 21, 25. (C. robustus, micropus, angulatus, turritus).
Subcarboniferous (Keokuk); Illinois.

Cladodus romingeri Newb.

Newberry, J. S. 1875 A, p. 49.
1889 A, p. 177, pl. xxvii, fig. 10.
Woodward, A. S. 1889 D, p. 25.
Subcarboniferous (Waverly); Michigan.

Cladodus spinosus Newb. and Worth.

Newberry and Worthen 1866 A, p. 22, pl. i, figs. 3, 3*a*.
Dana, J. D. 1896 A, p. 644, fig. 1021.
Hambach, G. 1890 A, p. 80.
Woodward, A. S. 1889 D, p. 22.
Subcarboniferous (St. Louis); Missouri.

Cladodus splendens Newb.

Newberry, J. S. 1897 A, p. 284, pl. xxii, fig. 1.
Subcarboniferous (Kinderhook); Iowa.

Cladodus springeri St. J. and Worth.

St. John and Worthen 1875 A, p. 259, pl. ii, figs. 1–13
Destinez, P. 1898 A, p. 222.
Koninck, L. G. de 1878 A, p. 28, pl. iii, figs. 5, 6.
Sauvage, H. E. 1888 A, p. 47.

Woodward, A. S. 1889 D, p. 22.
Subcarboniferous (Kinderhook); Iowa. Also reported from Belgium.

Cladodus stenopus Newb. and Worth.

Newberry and Worthen 1866 A, p. 23, pl. i, figs. 4, 4*a*.
Woodward, A. S. 1889 D, p. 25.
Subcarboniferous (St. Louis); Illinois.

Cladodus striatus Agassiz.

Agassiz, L. 1843 B, iii, p. 197 pl. xxii *b*, figs. 14–17.
Davis, J. W. 1883 A, p. 375, pl. xlix, figs. 12, 13 (C. striatus); p. 374, pl. xlix, figs. 10, 11 (C. elongatus); p. 379, pl. xlix, fig. 19 (C. curtus); p. 380, pl. xlix, fig. 20 (C. hornei).
Eastman, C. R. 1900 B, p. 36.
Traquair, R. H. 1888 A. p. 81.
Woodward, A. S. 1889 D, p. 19.
Subcarboniferous; England, Ireland: Devonian (Corniferous); Ohio (if correctly identified).

Cladodus subulatus Newb.

Newberry, J. S. 1875 A, p. 47, pl. lviii, fig. 7.
Woodward, A. S. 1889 D, p. 25.
Devonian (Cleveland shale); Ohio.

Cladodus succinctus St. J. and Worth.

St. John and Worthen 1875 A, p. 265, pl. iii, figs 8–12.
Koninck, L. G. de 1878 A, p. 29.
Woodward, A. S. 1889 D, pp. 22, 25.
Subcarboniferous (Kinderhook); Iowa.

Cladodus terrelli Newb.

Newberry, J. S. 1889 A, p. 170, pl. xxvii, figs. 5–7.
Dean, B. 1894 A, p. 107. (C. terrelli?).
Devonian (Cleveland shale); Ohio.

Cladodus tumidus Newb.

Newberry, J. S. 1889 A, p. 172, pl. xxvii, figs. 8–9.
Devonian (Cleveland shale); Ohio.

Cladodus turritus Newb. and Worth.

Newberry and Worthen 1866 A, p. 28, pl. i, fig. 14.
Woodward, A. S. 1889 D, p. 21. (Syn. of C. robustus).
Subcarboniferous (Keokuk); Illinois.

Cladodus vanhornei St. J. and Worth.

St. John and Worthen 1875 A, p. 273, pl. iv, fig. 5.
Woodward, A. S 1889 D, p. 25.
Subcarboniferous (St. Louis); Illinois.

Cladodus wachsmuthi St. J. and Worth.

St. John and Worthen 1875 A, p. 263, pl. iii, figs. 1–7.
Davis, J. W. 1883 A, p. 376.
Koninck, L. G. de 1878 A, p. 29.
Woodward, A. S. 1889 D, pp. 22, 26. (C. vachsmuthi.)
Subcarboniferous (Kinderhook); Iowa.

Cladodus zygopus Newb. and Worth.

Newberry and Worthen 1866 A., p. 25, pl. i, figs. 9, 9*a*.
Woodward, A. S. 1889 D, p. 26.
Subcarboniferous (Chester); Illinois.

PHŒBODUS St. J. and Worth. Type *P. sophiæ* St. J. and Worth.

St. John and Worthen 1875 A, p. 251.
Eastman, C. R. 1899 C, p. 489.
Garman, S. 1885 B, p. 31 (Pternodus, type *P. springeri;* not of Owen, 1867).
Miller, S. A. 1889 A, p. 588 (Bathychilodus); p. 606 (Phœbodus).
St. John and Worthen 1875 A, p. 252. (Bathycheilodus, type *B. macisaacsii* St. J. and Worth.)
Woodward, A. S. 1889 D, p. 27.

Phœbodus macisaacsii (St. J. and Worth.).

St. John and Worthen 1875 A, p. 252, pl. i, figs. 12–13*d*. (Bathycheilodus.)
Miller, S. A. 1889 A, p. 588, fig. 1103. (Bathychilodus).
Woodward, A. S. 1889 D, p. 27.
Middle Devonian; Iowa.

Phœbodus politus Newb.

Newberry, J. S. 1889 A, p. 173, pl. xxvii, figs. 27–28*a*.
Eastman, C. R. 1899 C, p. 491, pl. vii, fig. 5.
Devonian (Cleveland shale); Ohio, Illinois.

Phœbodus sophiæ St. J. and Worth.

St. John and Worthen 1875 A, p. 251, pl. i, figs. 14–14*d*.
Lesley, J. P. 1889 A, p. 635, figures.
Miller, S. A. 1889 A, p. 606, fig. 1158.
Newberry, J. S. 1889 A, p. 174.
Woodward, A. S. 1889 D, p. 27.
Middle Devonian, Iowa.

Phœbodus springeri (St. J. and Worth.).

St. John and Worthen 1875 A, p. 255, pl. i, figs. 7–7*d*. (Pristicladodus.)
Garman, S. 1885 B, p. 31. (Pternodus.)
Lesley, J. P. 1889 A, p. 745, figures. (Pristacladodus springeri, P. armatus.)
Miller, S. A. 1889 A, p. 608, fig. 1162. (Pristicladodus.)
St. John and Worthen 1875 A, p. 256, pl. i, figs. 8–11c. (Pristicladodus springeri, P. armatus.)
Woodward, A. S. 1889 D, p. 27. (Phœbodus.)
Subcarboniferous (Kinderhook); Iowa.

LAMBDODUS St. J. and Worth. Type *L. costatus* St. J. and Worth.

St. John and Worthen 1875 A, p. 280.
Miller, S. A. 1889 A, p. 600.
Nicholson and Lydekker 1889 A, p. 928.
Woodward, A. S. 1889 D, p. 27.

Lambdodus calceolus St. J. and Worth.

St. John and Worthen 1875 A, p. 281, pl. v., fig. 5.
Keyes, C. R. 1894 A, p. 230.

St. John and Worthen 1875 A, p. 282, pl. i, figs. 6–6c (var. robustus).
Woodward, A. S. 1889 D, p. 27 (L. calceolus and L. robustus).
Subcarboniferous (Burlington); Iowa, Illinois: (Keokuk); Illinois, Missouri, Iowa.

Lambdodus costatus St. J. and Worth.

St. John and Worthen 1875 A, p. 280, pl. v, fig. 3.
Keyes, C. R. 1894 A, p. 229.
Miller, S. A. 1889 A, p. 600, fig. 1140.
Subcarboniferous (Burlington, Keokuk); Iowa, Illinois, Missouri.

Lambdodus hamulus St. J. and Worth.

St. John and Worthen 1875 A, p. 283, pl. v, figs. 26*a*–26*c*. (L. hamatus, on explanation of plate.)
Woodward, A. S. 1889 D, p. 27.
Subcarboniferous (Chester); Illinois.

Lambdodus reflexus St. J. and Worth.

St. John and Worthen 1875 A, p. 284, pl. v, figs. 25, 25*a*.
Woodward, A. S. 1889 D, p. 27.
Subcarboniferous (Chester); Illinois.

Lambdodus transversus St. J. and Worth.

St. John and Worthen 1875 A, p. 282, pl. v, figs. 4*a*, 4*b*.
Woodward, A. S. 1889 D, p. 27.
Subcarboniferous (St. Louis); Illinois.

Carcharopsis Agassiz. Type *C. prototypus* Agassiz=*Pristicladodus dentatus* McCoy.

Agassiz, L. 1843 B, iii, p. 313. (Definition in footnote.)
Davis, J. W. 1883 A, p. 381; p. 384. (Pristicladodus.)
Eichwald, E. 1860 A, p. 1604. (Dicrenodus.)
Günther, A. 1880 A, p. 319.
Hasse, C. 1878 A, p. 168. (Pristicladodus.)
McCoy, F. 1855 A, p. 642.
Miller, S. A. 1889 A, p. 589 (Carcharopsis); p. 608. (Pristicladodus).
1892 A, p. 714. (Dicrenodus.)
Nicholson and Lydekker 1889 A, p. 944 (Carcharopsis); 928 (Dicrenodus).
Pictet, F. J. 1854 A, p. 239.
Romanovsky, G. 1858 A, p. 408, pl. viii. (Dicrenodus, type *D. okensis*.)
St. John and Worthen 1875 A, p. 253 (Pristicladodus); p. 254 (Carcharopsis).
Woodward, A. S. 1886 A, p. 268.
1889 D, p. 28. (Dicrenodus.)
Woodward and Sherborn 1890 A, p. 63. (Dicrenodus.)
Zittel, K. A. 1890 A, p. 81 (Carcharopsis); p. 66 (Pristicladodus).

Carcharopsis wortheni Newb.

Newberry and Worthen 1866 A, p. 69, pl. iv, figs. 14 14*a*.
Dana, J. D. 1896 A, p. 644, fig. 1020.
Davis, J. W. 1883 A, p. 383. (Pristicladodus.)
Miller, S. A. 1889 A, p. 589, fig. 1106.
St. John and Worthen 1875 A, p. 255.
Woodward, A. S. 1889 D, p. 29. (Dicrenodus.)
Subcarboniferous; Alabama.

Hybocladodus St. J. and Worth. Type *H. plicatilis* St. J. and Worth.

St. John and Worthen 1875 A, p. 284.
Miller, S. A. 1889 A, p. 600.
Nicholson and Lydekker 1889 A, p. 928.
Woodward, A. S. 1889 D, p. 29.

Hybocladodus compressus (Newb. and Worth).

Newberry and Worthen 1866 A, p. 78, pl. v, fig. 1. (Helodus.)[1]
St. John and Worthen 1875 A, p. 287, pl. v. fig. 8.
Woodward, A. S. 1889 D, p. 29.
Subcarboniferous (Burlington); Iowa.

Hybocladodus intermedius St. J. and Worth.

St. John and Worthen 1875 A, p. 287, pl. v, fig. 11.
Woodward, A. S. 1889 D, p. 29.
Subcarboniferous (Keokuk); Iowa, Illinois.

Hybocladodus nitidus St. J. and Worth.

St. John and Worthen 1875 A, p. 288, pl. v, fig. 7.
Woodward, A. S. 1889 D, p. 29.
Subcarboniferous (Chester); Illinois.

Hybocladodus plicatilis St. J. and Worth.

St. John and Worthen 1875 A, p. 286, pl. v, fig. 9
Miller, S. A. 1889 A, p. 600.
Woodward, A. S. 1889 D, p. 30.
Subcarboniferous (Burlington); Iowa.

Hybocladodus tenuicostatus St. J. and Worth.

St. John and Worthen 1875 A, p. 286, pl. v, fig. 10.
Woodward, A. S. 1889 D, p. 30.
Subcarboniferous (Keokuk); Illinois, Iowa.

Symmorium Cope. Type *S. reniforme* Cope.

Cope, E. D. 1893 L.
1894 F, p. 427.

Symmorium reniforme Cope.

Cope, E. D. 1893 L.
Brown, C. 1900 A, p. 171, fig. 6c.
Cope, E. D. 1894 F, p. 427, pl. xviii, figs. 1–5.
Coal-measures; Illinois.

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[1] Not *H. compressus* Newberry and Worthen 1870 A, p. 860.

MONOCLADODUS Claypole. Type *M. clarki* Claypole.

Claypole, E. W. 1893 B, p. 329.
1893 G, p. 619.
Cope, E. D. 1893 O. (Syn. of Styptobasis.)
1894 F, p. 434.

Monocladodus clarki Claypole.

Claypole, E. W. 1893 B, p. 329, pl. viii.
1893 D, p. 447, fig. 2.
Claypole, E. W. 1893 G, p. 619, pl. xl, fig. 2.
Cope, E. D. 1893 O.
Devonian (Cleveland shale); Ohio.

Monocladodus pinnatus Claypole.

Claypole, E. W. 1893 B, p. 330.
Cope, E. D. 1893 O.
Devonian (Cleveland shale); Ohio.

STYPTOBASIS Cope. Type *S. knightiana* Cope.

Cope, E. D. 1891 B, p. 447.
1893 O.

Styptobasis aculeata Cope.

Cope, E. D. 1894 F, p. 434, pl. xx, figs. 1-5.
Coal-measures; Illinois.

Styptobasis knightiana Cope.

Cope, E. D. 1891 B, p. 447, pl. xxviii, fig. 1.
Knight, W. C. 1899 A, p. 374.
Woodward, A. S. 1892 B, p. 233.
Permian; Nebraska.

Order PLEUROPTERYGIA Dean.

Dean, B. 1894 A, p. 110.
Woodward, A. S. 1898 B, p. 29. (Pleuropterygii.)

CLADOSELACHIDÆ.

Dean, B. 1894 A, p. 111.
1895 A.
1896 C.

CLADOSELACHE Dean. Type *Cladodus fyleri* (Newb.).

Dean, B. 1893 C, p. 124.
Brown, C. 1900 A, p. 172.
Case, E. C. 1898 B, p. 402.
Cope, E. D. 1894 F, p. 429.
Dean, B. 1894 A.
1895 A.
1896 B.
1896 C.
Jaekel, O. 1892 A. (Syn. of Cladodus.)
Reis, O. M. 1896 A.
Traquair, R. H. 1900 B, p. 516.
Woodward, A. S. 1892 E. (Cladodus.)
1895 B, p. 40.
1898 B, p. 30.

Cladoselache clarki (Claypole.)

Claypole, E. W. 1893 B, p. 327, pl. vii. (Cladodus.)
Dana, J. D. 1896 A, p. 619, fig. 976. (Cladodus.)
Claypole, E. W. 1895 A, pls. i, ii. (Cladodus.)
Dean, B. 1896 B, p. 677, fig. 7.
Devonian (Cleveland shale); Ohio.

Cladoselache fyleri (Newb.).

Newberry, J. S. 1889 A, pls. xlvi, xlix, figs. 2, 3; no description. (Cladodus.)
Claypole, E. W. 1893 B, p. 325. (Cladodus.)
1893 G, p. 616. (Cladodus.)
1895 H, p. 191. (Cladodus.)
Dana, J. D. 1896 A, p. 619, fig. 977.
Dean, B 1894 A.
1894 B, p. 115, pl. ii, figs. 1, 2,
1895 A, p. 79, fig. 86.
1896 B.
Jaekel, O. 1892 A, p. 91. (Cladodus.)
Mollier, S. 1893 A, p. 118. (Cladodus.)
Woodward, A. S. 1895 B, p. 40.
1898 B, p. 31, fig. 24.
Devonian (Cleveland shale); Ohio.

Cladoselache kepleri (Newb.).

Newberry, J. S. 1888 D, p. 178. (Cladodus.)
Claypole, E. W. 1893 B, p. 327, pl. vii. (Cladodus.)
1893 G, p. 616. (Cladodus.)
Dean, B. 1894 A, p. 108.
1896 B, p. 676, fig. 5.
Jaekel, O. 1892 A, p. 82. (Cladodus.)
Newberry, J. S. 1889 A, pls. xliv, xlv. (Cladodus.)
Woodward, A. S. 1889 D, p. 457. (Cladodus.)
Devonian (Cleveland shale); Ohio.

Cladoselache newberryi Dean.

Dean, B. 1894 B, pl. i, figs. 3-8.
Cope, E. D. 1895 B. (Cladodus.)
Dean, B. 1896 B, p. 677, fig. 5.
Woodward, A. S. 1895 B, p. 41, fig. 2.
Subcarboniferous (Waverly); Ohio.

Cladoselache sinuatus (Claypole).

Claypole, E. W. 1893 B, p. 327, pl. vii. (Cladodus.)
1893 G, p. 618, pl. xliii, fig. 6 (Cladodus? sinuatus); explan. pl. xliii (Cladodus rotundiceps).
Dana, J. D. 1896 A, p. 619, fig. 976. (Cladodus.)
Devonian (Cleveland shale); Ohio.

Order ACANTHODII Owen.

Owen, R. 1860 E, p. 130.
Cope, E. D. 1891 N, pp. 15, 18.
1893 L.
1898 B, p. 22.
Fritsch, A. 1895 A (1893), p. 49. ("Tribus Acanthodides.")
Gadow, H. 1898 A, p. 6. (Acanthodi.)
Haeckel, E. 1895 A, pp. 236, 246. (Acanthodini.)
Huxley, T. H. 1861 B, p. 37. (Acanthodidæ.)
Jaekel, O. 1896 B, p. 126.
Woodward, A. S. 1891 A, pp. xi, 1.
1898 B, p. 35.

ACANTHOËSSIDÆ.[1]

Agassiz, L. 1844 B, p. 32. ("Acanthodiens.")
1846 A, p. 45. ("Acanthodiens.")
Cope, E. D. 1893 L.
Davis, J. W. 1894 A, p. 249.
Dean, B. 1895 A.
Egerton, P. G. 1866 A.
Fritsch, A. 1895 A (1893), p. 49.
Günther, A. 1881 A, p. 686. (Acanthodini.)
Huxley, T. H. 1861 B, p. 37.
1872 A, p. 129.
Jaekel, O. 1892 A.
Klaatsch, H. 1890 A, p. 149.
Lütken, C. 1873 A, p. 41.
Newberry, J. S. 1878 A, p. 258.
Nicholson and Lydekker 1889 A, p. 966.
Pictet, F. J. 1854 A, p. 188. ("Acanthodiens.")
Powrie, J. 1864 B, p. 417.
Reis, O. M. 1892 A.
1895 B.
1896 A.
1897 A, p. 87.
Rohon, V. 1893 A, p. 20.
Steinmann and Döderlein 1890 A, p. 564.
Traquair, R. H. 1881 A, p. 18.
1891 A, p. 124.
1894 A.
Woodward, A. S. 1891 A, p. 2.
1898 B, p. 39.
Zittel, K. A. 1890 A, p. 165.

ACANTHOËSSUS[2] Agassiz. Type *A. browni* Agassiz.

Agassiz, L. 1832, Leonhard and Brown's Zeitschr. f. Mineral., p. 149.

By the following authors this genus is referred to by the name *Acanthodes:*

Agassiz, L. 1843 B (1834), ii, pt. i, pp. 3, 19 (Acanthoëssus changed to Acanthodes.)
1844 A.
1844 B, p. 32.
Beyrich, E. 1848 A, p. 24. (Holacanthodes.)
Davis, J. W. 1894 A, p. 249.
Dean, B. 1895 A.
Egerton, P. G. 1861 B.
Fritsch, A. 1895 A (1893), p. 58.
Gadow, H. 1898 A, p. 6.
Jaekel, O. 1899 B, p. 56, figs. 1, 2.
Kner, R. 1868 A, p. 290.
Miller, S. A. 1889 A, p. 586.
Nicholson and Lydekker 1889 A, p. 966.
Pictet, F. J. 1854 A, p. 189.
Quenstedt, F. A. 1852 A, p. 191.
1885 A, p. 302.
Reis, O. M. 1896 A.
Roemer, F. 1857 A, p. 65.
Rohon, V. 1889 A.
1893 A, pp. 20, 55.
Steinmann and Döderlein 1890 A, p. 564.
Traquair, R. H. 1888 B, p. 511. (Mesacanthus.)
1893 B, p. 177.
1894 A.
Woodward, A. S. 1891 A, p. 1.
1898 B, p. 39.
Zittel, K. A. 1890 A, p. 166.

Acanthoëssus affinis (Whiteaves).

Whiteaves, J. F. 1887 A, p. 107. (Acanthodes mitchelli?, with A. affinis as alternative.)
Dana, J. D. 1896 A, p. 620, fig. 978. (Acanthodes.)
Traquair, R. H. 1890 A, p. 16. (Mesacanthus affinis.)
Whiteaves, J. F. 1883 A, p. 354. (Acanthodes mitchelli?.)
1888 B, p. 160. (Acanthodes mitchelli?.)
1889 A, p. 91, pl. v, figs. 1–1*f*. (Acanthodes affinis.)
Woodward, A. S. 1891 A, p. 14. (Acanthodes affinis.)
Upper Devonian; Quebec, Canada.

Acanthoëssus concinnus (Whiteaves).

Whiteaves, J. F. 1887 A, p. 107, pl. x, figs. 1, 1*a*. (Acanthodes.)
Traquair, R. H. 1890 A, p. 15. (Acanthodes.)
Whiteaves, J. F. 1889 A, pl. v, fig. 2. (Acanthodes).
Woodward, A. S. 1891 A, p. 10. (Acanthodes.)
Upper Devonian; Quebec, Canada.

Acanthoëssus? pristis (Clarke).

Clarke, J. M. 1885 A, p. 42. (Acanthodes?.)
Woodward, A. S. 1891 A, p. 15. (Acanthodes?)
Devonian (Genesee); New York.

Acanthoëssus semistriatus (A. S. Woodward).

Woodward, A. S. 1892 A, p. 3, pl. 1, fig. 3. (Acanthodes.)
Lower Devonian; New Brunswick.

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[1] By most authors this family is called *Acanthodidæ*. The change is necessitated by adopting the earlier generic name *Acanthoëssus* for *Acanthodes*.

[2] The law of priority, which lies at the base of all codes of nomenclature, requires the restoration of the name first given by Agassiz to this genus.

CHEIRACANTHUS Agassiz. Type *C. murchisoni* Agassiz.

Agassiz, L. 1843 B (1835), ii, pt. i, p. 125.
1844 B, p. 39.
Gadow, H. 1898 A, p. 6.
McCoy, F. 1855 A, p. 582.
Pictet, F. J. 1854 A, p. 189.
Reis, O. M. 1896 A.
Traquair, R. H. 1893 A.
Woodward, A. S. 1891 A, p. 16.
Woodward and Sherborn, 1890 A, p. 29.
Zittel, K. A. 1890 A, p. 167.

Cheiracanthus costellatus Traquair.

Traquair, R. H. 1884 B, p. 3, pl. ii. (Ctenacanthus.)
Garman, S. 1884 C, p. 484. (Ctenacanthus.)
Traquair, R. H. 1888 A, p. 81. (Ctenacanthus costellatus?)
1893 A, p. 146.
1893 D, p. 112.
Woodward, A. S. 1889 D, p. 242. (Sphenacanthus.)
Subcarboniferous; Scotland: Devonian; Province of Quebec, Canada (if correctly identified).

DIPLACANTHIDÆ.

Cope, E. D. 1891 N, p. 19.
Traquair, R. H. 1894 A.
Woodward, A. S. 1891 A, p. 22.

DIPLACANTHUS Agassiz. Type *D. crassisimus* Duff.

Agassiz, L. 1844 B. pp. 34, 40.
Dean, B, 1894 A, p. 110.
Egerton, P. G. 1861 B.
Gadow, H. 1898 A, p. 6.
McCoy, F. 1855 A, p. 584.
Pictet, F. J. 1854 A, p. 191.
Reis, O. M. 1896 A, p. 167.
Traquair, R. H. 1888 B, p. 512. (Rhadinacanthus, type *R. longispinis*.)
1891 A, p. 125.
1894 A.
Woodward, A. S. 1891 A, p. 23.
Woodward and Sherborn 1890 A, p. 65.
Zittel, K. A. 1890 A, p. 167.

Diplacanthus crassisimus Duff.

Duff, P. 1842, Geol. Moray, p. 71, pl. x, fig. 2. (Diplocanthus.)
Agassiz, L. 1844 B, pp. 34, 41, pl. xiv, figs. 1-5 (D. striatus); pp. 34, 42, pl. xiii, figs. 3, 4 (D. striatulus); pp. 34, 43, pl. xiii, figs, 1, 2; pl. xiv, figs. 6, 7 (D. crassispinus).
McCoy, F. 1848 C, p. 301. (D. gibbus.)
1855 A, p. 584, pl. ii B, fig. 4. (D. gibbus.)
Traquair, R. H. 1888 B, p. 512. (D. striatus.)
Whiteaves, J. F. 1881 A, p. 495. (D. striatus ?.)
1883 A, p. 354. (D. ?)
1883 B, p. 160. (D. "sp. undt.")
1883 D, p. 29. ("Diplacanthus.")
Woodward, A. S. 1891 A, p. 24.
Devonian; Scotland, Canada?.

CLIMATIUS Agassiz. Type *C. reticulatus* Agassiz.

Agassiz, L. 1844 B, p. 119.
Egerton, P. G. 1861 B, p. 28.
Nicholson and Lydekker 1889 A, p. 968.
Pictet, F. J. 1854 A, p. 298.
Powrie, J. 1864 B, p. 420 (Climatius); p. 425, pl. xx (Euthacanthus, type *E. macnicoli*).
Woodward, A. S. 1891 A, p. 28.
Woodward and Sherborn, 1890 A, p. 36.
Zittel, K. A. 1890 A, p. 168.

Climatius? latispinosus (Whiteaves).

Whiteaves, J. F. 1881 E, p. 99. (Ctenacanthus.)
Traquair, R. H. 1890 A, p. 21. (Climatius.)
Whiteaves, J. F. 1883 A, p. 355. (Ctenacanthus.)
1883 B, p. 164. (Ctenacanthus.)
1889 A, p. 95, pl. x, figs. 3–3*b*. (Ctenacanthus.)
Woodward, A. S. 1889 G, p. 183. (Climatius.)
1891 A, p. 33. (Climatius?.)
1892 A, p. 3. (Climatius.)
Lower Devonian; New Brunswick.

Superorder EUSELACHII,[1] *nom. nov.*

Order SELACHA Bonaparte.

Bonaparte, C. L., 1832-1841, Iconograph. Fauna Ital., iii, Introd.

The form *Selachii* of this word is employed by the following writers unless otherwise indicated. The content of the term also varies greatly with the different authors.

Agassiz, L. 1843 B (1838), iii, p. 73. ("Placoides.")
Beard, J. 1890 A.
Cope, E. D. 1872 C, p. 326.
1877 O, p. 41.
1878 A, p. 292.
1884 HH.
1885 G.
1889 R, p. 854.
1891 N, p. 15.
1898 B, p. 24.

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[1] This superordinal name is employed to include all *Elasmobranchii* except the *Ichthyotomi*. The living sharks and rays may be regarded as constituting the types of the group. It is quite probable that a more complete knowledge of the Paleozoic families will cause them to be removed from association with the yet living families.

Dohrn, A. 1886 A.
Emery, C. 1897 B.
Gadow, H., 1898 A, p. 5.
Garman, S. 1884 C.
Gegenbaur, C. 1895 B.
Gill, T. 1884 B.
1884 C.
Goeppert, E. 1895 A.
1895 B.
Günther, A. 1881 A, p. 685.
Haeckel, E., 1895 A, p. 242. (Plagiostomi.)
Hasse, C. 1893 A.
Haswell, W. A. 1884 A, p. 112. (Selachoidei.)
Howes, G. B. 1890 A.
Jaekel, O. 1890 A.
1890 C.
1894 A.
Jordan and Evermann 1896 A, p. 15.
Kehner, F. A. 1876 A.
Klaatsch, H. 1894 A.
Köstlin, O. 1844 A, p. 437. ("Haifische.")
Leidy, J. 1871 C, p. 369.
Mayer, P. 1886 A.
Mollier, S. 1893 A, p. 6.
Newberry and Worthen 1866 A.
Owen, R. 1866 A, p. 13.
Parker, W. K. 1878 A.
St. John and Worthen 1875 A.
1883 A.
Sagemehl, M. 1883 A, p. 224.
Steinmann and Döderlein 1890 A, p. 548.
Tomes, C. S. 1898 A, p. 240. (Selachia.)
Stephan, P. 1900 A. ("Sélaciens.")
Wiedersheim, R. 1889 A, p. 428.
Woodward, A. S. 1886 A.
1889 D, p. 30.
1892 G.
1895 B.
1898 B, p. 89.
Zittel, K. A. 1890 A, p. 60.

Suborder SQUALI.[1]

Duméril, A. 1865 A, p. 309. ("Squales ou Pleurotrèmes.")
Gegenbaur, C. 1898 A.
Gibbes, R. W. 1843 A.
1847 A.
1848 B.
Gill, T. 1861 A, p. 23.
1862 A.
Günther, A. 1870 A, p. 353. (Selachoidei.)
1880 A, p. 314. (Selachoidei.)
Haeckel, E. 1895 A, p. 242. (Squalacei.)
Müller, J. 1846 C, p. 208. (Squalidæ.)
Müller and Henle 1841 A.
Owen, R. 1845 B, p. 26. ("Squaloids.")
1847 B, p. 255.
1860 E, p. 106. (Squalidæ.)
Pictet, F. J. 1854 A, p. 234. ("Squalidiens.")
Stannius, H. 1854 A. (Squalidæ.)
Steinmann and Döderlein 1890 A, p. 545.
Woodward, A. S. 1889 D, pp. xxxix, 157. (Asterospondyli.)

Superfamily PETALODONTOIDEA, nom. nov.

PETALODONTIDÆ.

Newberry and Worthen, 1866 A, p. 31.
Cope, E. D. 1891 A, p. 16.
1898 B, p. 24.
Davis, J. W. 1883 A, pp. 331, 483.
Jaekel, O. 1895 B.
1898 A, p. 49 (with subfamilies Janassinæ, Polyrhizodontinæ, and Pristodontinæ.)
1899 A, p. 258.
1900 A, p. 147.
Koninck, L. G. de 1878 A, p. 29.
Newberry, J. S. 1889 A, p. 185.
Newberry and Worthen 1866 A, p. 46.
Nicholson and Lydekker 1889 A, p. 927.
Traquair, R. H. 1888 A, p. 85.
Woodward, A. S. 1885 B, pp. 156, 226.
1889 D, p. 35.
1898 B, p. 50.
Zittel, K. A. 1890 A, p. 96.

JANASSA Münster. Type *Trilobites bituminosus* Schlotheim.

Münster, G. 1839, Beiträge Petrefakt., pt. i, p. 67.
Agassiz, L. 1843 B, iii, p. 375.
Atthey, T. 1868 B.
Barkas, T. P. 1868 A. (Climaxodus.)
Cope, E. D. 1877 N, p. 52. (Strigilina, with *S. linguæformis* Cope = *J. strigilina* Cope as type.)
Davis, J. W. 1882 B, p. 60.
Hancock and Atthey 1869 A.
Hancock and Howes 1870 A.
Jaekel, O. 1894 A, p. 65.
1895 B, p. 201.
1898 A, p. 48.
1899 A, p. 258, pls. xiv, xv, and text figs.
McCoy, F. 1848 A, p. 128 (Climaxodus, with *C. imbricatus* as type.)
1855 A, p. 620.
Miller, S. A. 1889 A, p. 591 (Climaxodus); p. 600. (Janassa).
Nicholson and Lydekker 1889 A, p. 929.
Pictet, F. J. 1854 A, p. 270 (Climaxodus); p. 282 (Janassa).
Woodward, A. S. 1885 B, p. 227.
1888 E.
1889 D, p. 34.
Zittel, K. A. 1890 A, p. 98.

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[1] Additional literature bearing on this group may be looked for under the heads "Elasmobranchii" and "Selachii."

Janassa brevis (Newb.).

Newberry. J. S. 1856 B, p. 100. (Climaxodus.)
Miller, S. A. 1889 A, p. 591.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Coal-measures; Ohio.

Janassa gurleiana Cope.

Cope. E. D. 1877 E, p. 191. (Strigilina.)
Case, E. C. 1900 A, p. 700, pl. i, figs. 2*a*–2*c*. (J. gurleyana.)
Cope, E. D. 1881 K, p. 163.
1888 BB, p. 285.
Woodward, A. S. 1889 D, p. 39.
Permian; Illinois.

Janassa ordiana Cope.

Cope, E. D. 1881 K, p. 163.
1888 BB, p. 285.
Woodward, A. S. 1889 D, p. 39.
Permian; Texas.

Janassa strigilina Cope.

Cope, E. D. 1881 K, p. 163.
Case, E. C. 1900 A, p. 699, pl. i, figs. 1*a*–1*c*.
Cope, E. D. 1877 E, p. 191. (Strig. linguæformis.)
1877 N, p. 52. (Strigilina linguæformis Cope, not of Atthey.)
1888 BB, p. 285.
Miller, S. A. 1889 A, p. 600. (J. linguiformis.)
Woodward, A. S. 1889 D, p. 38.
Permian; Illinois.

PELTODUS Newb. and Worth. Type *P. unguiformis* Newb. and Worth.

Newberry and Worthen 1870 A, p. 362.
Jaekel, O. 1899 A, p. 278.
Miller, S. A. 1889 A, p. 605.
St. John and Worthen 1875 A, p. 409.
Woodward, A. S. 1889 D, pp. 34, 39. (Syn. of Janassa.)

Peltodus ? plicomphalus St. J. and Worth.

St. John and Worthen 1875 A, p. 411, pl. xiii, fig. 9.
Lesley, J. P. 1889 A, p. 614, figures.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Subcarboniferous (Chester); Illinois.

Peltodus pulvinulus Newb. and Worth.

Newberry and Worthen 1870 A, p. 362.
Subcarboniferous; Illinois.

Peltodus quadratus St. J. and Worth.

St. John and Worthen 1875 A, p. 410, pl. xiii, figs. 6, 7.
Keyes, C. R. 1894 A, p. 232.
Lesley, J. P. 1889 A, p. 614, figures.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Subcarboniferous (St. Louis); Illinois, Missouri.

Peltodus transversus St. J. and Worth.

St. John and Worthen 1875 A, p. 412, pl. xiii, fig. 8.
Lesley, J. P. 1889 A, p. 614, figure.
Woodward, A. S. 1899 D, p. 39. (Janassa.)
Coal-measures; Illinois.

Peltodus unguiformis Newb. and Worth.

Newberry and Worthen 1870 A, p. 363, pl. ii, fig. 7.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Coal-measures; Illinois.

TANAODUS St. J. and Worth. Type, none named.

St. John and Worthen 1875 A, p. 367.
Jaekel, O. 1899 A, p. 278.
Koninck, L. G. de 1878 A, p. 52.
Miller, S. A. 1889 A, p. 612.
Woodward, A. S. 1889 D, pp. 34, 39. (Syn. of Janassa.)

Tanaodus angularis (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 55, pl. iii, figs. 16, 16*a*. (Chomatodus angularis in text; C. angulatus on plate.)
St. John and Worthen 1875 A, p. 368. (T. angulatus.)
Woodward, A. S, 1889 D, p. 48. (Petalodus.)
Coal-measures; Illinois.

Tanaodus bellicinctus St. J. and Worth.

St. John and Worthen 1875 A, p. 376, pl. xi, figs. 14–16, 25.
Lesley, J. P. 1890 A, p. 1156, figures.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Subcarboniferous (Chester); Illinois.

Tanaodus depressus St. J. and Worth.

St. John and Worthen 1875 A, p. 378, pl. xi, figs. 11–13.
Lesley, J. P. 1890 A, p. 1156, figures.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Subcarboniferous (Chester); Illinois.

Tanaodus gracillimus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 51, pl. iii, figs. 12, 12*a*. (Chomatodus.)
Miller, S. A. 1889 A, p. 613, fig. 1176.
St. John and Worthen, 1775 A, p. 368.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (Burlington); Iowa.

Tanaodus grossiplicatus St. J. and Worth.

St. John and Worthen 1875 A, p. 375, pl. xi, fig. 26.
Lesley, J. P. 1890 A, p. 1156, figures.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Subcarboniferous (Chester); Illinois.

Tanaodus multiplicatus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 57, pl. iii, figs. 18, 18*a*. (Chomatodus.)
Koninck, L. G. de 1878 A, p. 53, pl. vi, figs. 10, 11.
Lesley, J. P. 1890 A, p. 1157, figures.
St. John and Worthen, 1875 A, p. 368.
Sauvage, H. E. 1888 A, p. 47.
Woodward, A. S. 1889 D, p. 49. (Petalodus.)
Subcarboniferous (Burlington); Iowa. Also in Subcarboniferous of Belgium.

Tanaodus obscurus (Leidy).

Leidy, J. 1857 H, p. 89, pl. v, figs. 22, 23. (Chomatodus.)
St. John and Worthen, 1875 A, p. 368.
Woodward, A. S. 1889 D, p. 228. (Chomatodus.)
Coal-measures; Illinois.

Tanaodus polymorphus St. J. and Worth.

St. John and Worthen 1875 A, p. 380, pl. xi, figs. 17–19, 24.
Lesley, J. P. 1890 A, p. 1157, figures.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Subcarboniferous (Chester); Illinois.

Tanaodus prænuntius St. J. and Worth.

St. John and Worthen 1875 A, p. 371, pl. xi, figs. 6–10.
Keyes, C. R. 1894 A, p. 231.
Lesley, J. P. 1890 A, p. 1158, figures.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Subcarboniferous (St. Louis); Illinois, Iowa, Missouri.

Tanaodus pumilis St. J. and Worth.

St. John and Worthen 1875 A, p. 369, pl. xi, figs. 1–5.
Lesley, J. P. 1890 A, p. 1158, figures.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Subcarboniferous (St. Louis); Illinois, Iowa.

Tanaodus sculptus St. J. and Worth.

St. John and Worthen 1875 A, p. 373, pl. xi, figs. 20–23.
Keyes, C. R. 1894 A, p. 231.
Lesley, J. P. 1890 A, p. 1158, figures.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Subcarboniferous (St. Louis); Illinois, Iowa, Missouri.

Tanaodus sublunatus St. J. and Worth.

St. John and Worthen 1875 A, p. 368, pl. xi, fig. 27.
Lesley, J. P. 1890 A, p. 1159, figures.
Woodward, A. S. 1889 D, p. 39. (Janassa.)
Subcarboniferous (St. Louis); Illinois.

CYMATODUS Newb. and Worth. Type *C. oblongus*, Newb. and Worth.

Newberry and Worthen 1870 A, p. 363.
Miller, S. A. 1889 A, p. 594.
Woodward, A. S. 1889 D, pp. 39, 458.

Cymatodus oblongus Newb. and Worth.

Newberry and Worthen 1870 A, p. 364, pl. iv, figs. 7, 7*a*.
Woodward, A. S. 1889 D, pp. 39, 458.
Coal-measures; Illinois.

THORACODUS Cope. Type *T. emydinus* Cope.

Cope, E. D. 1883 K, p. 108.
Miller, S. A. 1889 A, p. 613.
Woodward, A. S. 1889 D, p. 39. (=Janassa?.)
Probably a synonym of Janassa.

Thoracodus emydinus Cope.

Cope, E. D. 1883 K, p. 108.
Case, E. C. 1900 A, p. 702.
Miller, S. A. 1889 A, p. 613. (T. eurydinus.)
Woodward, A. S. 1889 D, p. 39.
Permian; Illinois.

FISSODUS St. J. and Worth. Type *F. bifidus* St. J. and Worth.

St. John and Worthen 1875 A, p. 413.
Jaekel, O. 1895 B, p. 201. (Syn. of Petalodus.)
1899 A, p. 289.
Miller, S. A. 1889 A, p. 597.
Nicholson and Lydekker 1889 A, p. 929.
Woodward, A. S. 1889 D, p. 40.

Fissodus bifidus St. J. and Worth.

St. John and Worthen 1875 A, p. 414, pl. xiii, figs. 1, 2.
Miller, S. A. 1889 A, p. 598, fig. 1131.
Woodward, A. S. 1889 D, p. 40.
Subcarboniferous (Chester); Illinois.

Fissodus tricuspidatus St. J. and Worth.

St. John and Worthen 1875 A, p. 415, pl. xiii, fig. 3.
Woodward, A. S. 1889 D, p. 40.
Subcarboniferous (Chester); Illinois.

CHOLODUS St. J. and Worth. Type *C. inæqualis* St. J. and Worth.

St. John and Worthen 1875 A, p. 415.
Miller, S. A. 1899 A, p. 590.
Woodward, A. S. 1889 D, p. 40.

Cholodus inæqualis St. J. and Worth.

St. John and Worthen 1875 A, p. 416, pl. xiii, figs. 4, 5.
Miller, S. A. 1889 A, p. 590, fig. 1108.
Coal-measures; Illinois, Iowa.

PETALORHYNCHUS Newb. and Worth. Type *Petalodus psittacinus* McCoy.

Newberry and Worthen 1866 A, p. 32.
Davis, J. W. 1882 A.
1882 B, p. 60.
1883 A, pp. 485, 516.
Jaekel, O. 1895 B. (Syn. of Petalodus.)
1899 A, p. 286.
Miller, S. A. 1889 A, p. 606.
Nicholson and Lydekker 1889 A, p. 929.
Woodward, A. S. 1889 D, p. 40.
Zittel, K. A. 1890 A, p. 97.

Petalorhynchus distortus St. J. and Worth.

St. John and Worthen 1875 A, p. 406, pl. xii, figs. 7, 8.
Keyes, C. R. 1894 A, p. 232.
Lesley, J. P. 1889 A, p. 626, figures.
Woodward, A. S. 1889 D, p. 42.
Subcarboniferous (St. Louis); Illinois, Iowa, Missouri.

Petalorhynchus pseudosagittatus St. J. and Worth.

St. John and Worthen 1875 A, p. 405, pl. xii, figs. 1–4.
Keyes, C. R. 1894 A, p. 232.
Lesley, J. P. 1889 A, p. 626, figures.
Woodward, A. S. 1889 D, p. 42.
Subcarboniferous (St. Louis); Illinois, Missouri, Iowa.

Petalorhynchus spatulatus St. J. and Worth.

St. John and Worthen 1875 A, p. 408, pl. xii, figs. 5, 6,
Lesley, J. P. 1889 A, p. 626, figures.
Woodward, A. S. 1889 D, p. 42.
Subcarboniferous (St. Louis); Illinois, Iowa?

Petalorhynchus striatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 40, pl. ii, figs. 8–8*b*.
Lesley, J. P. 1889 A, p. 626, figures.
1895 A, pl. dlxxi.
Woodward, A. S. 1889 D, p. 42.
Subcarboniferous (Burlington); Illinois.

PETALODUS Owen. Type *P. hastingsiæ* Agassiz.

Owen, R. 1845 B, p. 61, pl. xxii.
Barkas, W. J. 1874 A, p. 536.
Davis, J. W. 1882 A.
1882 B, p. 58.
1883 A, p. 484.
Hancock and Atthey, 1869 A.
Hancock and Howes, 1870 A, pp. 54, 61.
Jaekel, O. 1895 B.
1899 A, p. 286.
Koninck, L. G. de 1878 A, p. 49.
Leidy, J. 1855 D (Sicarius, type *S. extinctus*).
1856 S, p. 161.
McCoy, F. 1855 A, p. 635.
Miller, S. A. 1889 A, p. 605.
Newberry and Worthen 1866 A, pp. 31, 46.
Nicholson and Lydekker 1889 A, p. 930.
Pictet, F. J. 1854 A, p. 270.
Trautschold, H. 1874 B, p. 293.
Woodward, A. S. 1885 B, pp. 156, 226.
1889 D, p. 42.
Zittel, K. A. 1890 A, p. 97.

Petalodus curtus Newb. and Worth.

Newberry and Worthen 1870 A, p. 355, pl. iii, fig. 2.
Lesley, J. P. 1889 A, p. 625, figures.
St. John and Worthen 1875 A, p. 394, pl. xii, figs. 12–12*c* (with ?).
Woodward, A. S. 1889 D, p. 47.
Subcarboniferous (Keokuk); Illinois, Iowa.

Petalodus hybridus St. J. and Worth.

St. John and Worthen 1875 A, p. 394, pl. xii, fig. 10.
Woodward, A. S. 1889 D, p. 47.
Subcarboniferous (St. Louis); Illinois.

Petalodus knappi Newb.

Newberry, J. S. 1879 A, p. 345.
Kindle, E. M. 1898 A, p. 485.
Woodward, A. S. 1889 D, p. 47.
Subcarboniferous (Keokuk); Indiana.

Petalodus linguifer Newb. and Worth.

Newberry and Worthen 1866 A, p. 37, pl. ii, figs. 4–5*c*.
Hambach, G. 1890 A, p. 81.
Leidy J. 1876 C.
Woodward, A. S. 1889 D, p. 47.
Subcarboniferous (Chester); Illinois, Missouri (*fide* Hambach).

Petalodus ohioensis Safford.

Safford, J. M. 1853 A, figs. 1, 2. (Getalodus, *err. typ.*)
Eastman, C. R. 1896 D, p. 174. (P. alleghaniensis.)
Hambach, G. 1890 A, p. 81. (P. destructor.)
Hay, O. P. 1895 C. (P. ohioensis, P. securis.)
Leidy, J. 1855 D. (Sicarius extinctus.)
1856 S. p. 161, pl. xvi, figs. 4–6. (P. alleg.)
1859 C. (P. alleg.)
1873 B, pp. 312, 353, pl. xvii, fig 3. (P. alleg.)
Lesley, J. P. 1889 A, p. 624, figures. (P. alleg.)
1895 A, pl. dlxxi. (P. alleg., P. destructor.)
Miller, S. A. 1889 A, p. 605, fig. 1157. (P. alleg.)
Newberry, J. S. 1875 A, p. 52, pl. lviii, figs. 13, 13*a*, (P. alleg., P. destructor.)
Newberry and Worthen 1866 A, p. 35, pl. ii, figs. 1–3. (P. destructor.)
St. John, O. 1870 A, p. 433. (P. destructor.)
1872 A, p. 240, pl. iii, fig. 5.

St. John and Worthen 1875 A, p. 396. (P. alleg.)
Woodward, A. S. 1889 D, p. 46.
Coal-measures; Pennsylvania, Ohio, Illinois, Nebraska, Arkansas, Missouri.

Petalodus proximus St. J. and Worth.

St. John and Worthen 1875 A, p. 395, pl. xii, fig. 11.
Woodward, A. S. 1889 D, p. 48.
Coal-measures; Illinois.

Antliodus Newb. and Worth. Type, *A. mucronatus* Newb. and Worth.

Newberry and Worthen 1866 A, p. 33.
Davis, J. W. 1883 A, p. 485.
Koninck, L. G. de 1878 A, p. 51.
Miller, S. A. 1889 A, p. 587.
Newberry, J. S. 1889 A, p. 185.
St. John and Worthen, 1875 A, p. 368.
Woodward, A. S. 1889 D, pp. 42, 48. (Syn. of Petalodus.)
Woodward and Sherborn 1890 A, p. 145. (Syn. of Petalodus.)
Zittel, K. A. 1890 A, p. 97.

Antliodus arcuatus Newb.

Newberry, J. S. 1889 A, p. 208, pl. xix, figs. 3, 4.
Kindle, E. M. 1898 A, p. 484.
Subcarboniferous (St. Louis); Indiana.

Antliodus cucullus Newb. and Worth.

Newberry and Worthen 1866 A, p. 41, pl. iii, figs. 1-1*b*.
Woodward, A. S. 1889 D, p. 48. (Petalodus).
Subcarboniferous (Keokuk); Illinois.

Antliodus gracilis St. J. and Worth.

St. John and Worthen 1875 A, p. 393, pl. xi, fig. 29.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (Warsaw); Illinois.

Antliodus minutus Newb. and Worth.

Newberry and Worthen 1866 A, p. 43, pl. iii, figs. 3-3*b*.
Kindle, E. M. 1898 A, p. 484.
Koninck, L. G. de 1878 A, p. 52, pl. vi, fig. 9.
Newberry, J. S. 1879 A, p. 341.
Sauvage, H. E. 1888 A, p. 47.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous; Europe: (Keokuk); Illinois: (St. Louis); Indiana.

Antliodus mucronatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 38, pl. ii, figs. 6-6*b*.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (St. Louis); Illinois.

Antliodus parvulus Newb. and Worth.

Newberry and Worthen 1866 A, p. 38, pl. ii, figs. 7-7*a*.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (Burlington, Keokuk); Illinois.

Antliodus perovalis St. J. and Worth.

St. John and Worthen 1875 A, p. 393, pl. xi, fig. 28.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (Warsaw); Illinois.

Antliodus politus Newb. and Worth.

Newberry and Worthen 1866 A, p. 42, pl. iii, figs. 2, 2*a*.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (Keokuk); Illinois.

Antliodus robustus Newb. and Worth.

Newberry and Worthen 1866 A, p. 39, pl. ii, figs. 9-9*c*.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (Chester); Illinois.

Antliodus sarcululus Newb. and Worth.

Newberry and Worthen 1870 A, p, 356, pl. iii, figs. 8-8*b*.
Woodward, A. S. 1889 D, p. 458. (Petalodus.)
Subcarboniferous (Burlington); Iowa.

Antliodus similis Newb. and Worth.

Newberry and Worthen 1866 A, p. 41, pl. ii, figs. 10, 10*a*.
Kindle, E. M. 1898 A, p. 484.
Newberry, J. S. 1879 A, p. 346.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (Keokuk); Illinois, Indiana.

Antliodus simplex Newb. and Worth.

Newberry and Worthen 1866 A. p. 44, pl. iii, figs. 4, 4*a*.
Woodward, A. S. 1889 D. p. 48. (Petalodus.)
Subcarboniferous (Burlington); Iowa.

Antliodus sulcatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 45, pl. iii, figs. 5, 5*a*.
Woodward, A S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (Keokuk); Illinois.

Chomatodus Agassiz. Type *C. linearis* Agassiz.

Agassiz, L. 1843 B (1838), iii, p. 108.
1844 A.
Davis, J. W. 1883 A, p. 507.
Destinez, P. 1898 A, p. 220.
Koninck, L. G. de 1878 A, p. 45.
Leidy, J. 1857 H, p. 89. (Palæobatis, type *P. insignis* Leidy.)
McCoy, F. 1855 A, p. 617.
Miller, S. A. 1889 A, p. 590 (Chomatodus); p. 604 (Palæobatis).
Newberry, J. S. 1889 A, p. 186.
Newberry and Worthen 1866 A, p. 34.
Owen, R. 1845 B, p. 61.
Pictet, F. J. 1854 A, p. 266.
St. John and Worthen 1875 A, p. 367.

Woodward, A. S. 1889 D, p. 48 (Syn. of Petalodus); p. 228 (Chomatodus).
Woodward and Sherborn 1890 A, p. 32.
Zittel, K. A. 1890 A, p. 97.

Chomatodus affinis Newb. and Worth.

Newberry and Worthen 1866 A, p. 54, pl. iii, figs. 15, 15*a*.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (Keokuk); Illinois.

Chomatodus angustus Newb.

Newberry, J. S. 1879 A, p. 342.
Kindle, E. M. 1898 A, p. 484.
Woodward, A. S. 1889 D, p. 228.
Subcarboniferous (St. Louis); Indiana.

Chomatodus arcuatus St. John.

St. John, O. 1870 A, p. 435.
Destinez, P. 1898 A, p. 221.
St. John, O. 1872 p. 243, pl. vi, figs. 14*a*, 14*b*.
St. John and Worthen 1875 A, pl. x, figs. 23*a*, 23*b*.
Woodward, A. S. 1889 D, p. 228.
Coal-measures; Iowa, Nebraska, Belgium.

Chomatodus chesterensis St. J. and Worth.

St. John and Worthen 1875 A, p. 363, pl. x, figs. 15–17*d*.
Woodward, A. S. 1889 D, p. 228.
Subcarboniferous (Chester); Illinois.

Chomatodus comptus St. J. and Worth.

St. John and Worthen 1875 A, p. 356, pl. x, figs. 19–22.
Woodward, A. S. 1889 D, p. 228.
Subcarboniferous (Burlington); Iowa.

Chomatodus costatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 85, pl. v, figs. 17, 17*a*.
Woodward, A. S. 1889 D, p. 459.
Subcarboniferous (Keokuk); Illinois.

Chomatodus cultellus Newb. and Worth.

Newberry and Worthen 1866 A, p. 52, pl. iii, figs. 13, 13*a*.
St. John and Worthen 1875 A, p. 359.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (Chester); Illinois.

Chomatodus elegans Newb. and Worth.

Newberry and Worthen 1866 A, p. 86, pl. v, figs. 18–18*b*.
Woodward, A. S. 1899 D, p. 228.
Subcarboniferous (Keokuk); Iowa.

Chomatodus inconstans St. J. and Worth.

St. John and Worthen 1875 A, p. 360, pl. x, figs. 5–14.
Woodward, A. S. 1889 D, p. 228.
Subcarboniferous (St. Louis); Iowa.

Chomatodus incrassatus St. J. and Worth.

St. John and Worthen 1875 A, p. 359, pl. x, fig. 18.
Keyes, C. R. 1894 A, p. 231.
Miller, S. A. 1889 A, p. 590, fig. 1109.
Woodward, A. S. 1889 D, p. 458. (Petalodus.)
Subcarboniferous (St. Louis); Illinois, Iowa, Missouri.

Chomatodus insignis (Leidy).

Leidy, J. 1857 H, p. 89, pl. v, figs. 24–26. (Palæobatis.)
Miller, S. A. 1889 A, p. 604. (Palæobatis.)
St. John and Worthen 1875 A, p. 359, pl. x A, figs. 5–5*c*.
Woodward, A. S. 1889 D, p. 48. (Petalodus.)
Subcarboniferous (St. Louis); Missouri, Illinois.

Woodward regards the identification of Leidy's species with that of St. John and Worthen as doubtful.

Chomatodus loriformis Newb. and Worth.

Newberry and Worthen 1866 A, p. 58, pl. iii, figs. 19, 19*a*.
Woodward, A. S. 1889 D, p. 49. (Petalodus.)
Subcarboniferous (Keokuk); Illinois.

Chomatodus molaris Newb. and Worth.

Newberry and Worthen 1866 A, p. 56, pl. iii, figs. 17, 17*a*.
Woodward, A. S. 1889 D, p. 49. (Petalodus.)
Subcarboniferous (Keokuk); Illinois.

Chomatodus newberryi nom. nov.

Kindle, E. M. 1898 A, p. 484. (C. obliquus.)
Newberry, J. S. 1879 A, p. 342. (C. obliquus, not of McCoy, 1848.)
Woodward, A. S. 1889 D, p. 228. (C. obliquus.)
Subcarboniferous (St. Louis); Indiana.

Chomatodus parallelus St. J. and Worth.

St. John and Worthen 1875 A, p. 358, pl. x A. figs. 3, 4.
Keyes, C. R. 1894 A, p. 231.
Woodward, A. S. 1889 D, p. 49. (Petalodus.)
Subcarboniferous (Warsaw); Illinois, Missouri.

Chomatodus pusillus Newb. and Worth.

Newberry and Worthen 1866 A, p. 53, pl. iii, figs. 14–14*b*.
Kindle, E. M. 1898 A, p .484.
Woodward, A. S. 1889 D, p. 49. (Petalodus.)
Subcarboniferous (Keokuk); Illinois, Indiana.

Chomatodus selliformis Newb.

Newberry, J. S. 1879 A, p. 341.
Kindle, E. M. 1898 A, p. 484.
Woodward, A. S. 1889 D, p. 228.
Subcarboniferous (St. Louis); Illinois, Indiana.

Chomatodus varsouviensis St. J. and Worth.

St. John and Worthen 1875 A, p. 363, pl. x, figs. 1–4*b*.
Woodward, A. S. 1889 D, p. 228.
Subcarboniferous (Warsaw); Illinois, Missouri.

LISGODUS St. J. and Worth. Type *L. curtus* St. J. and Worth.

St. John and Worthen 1875 A, p. 363.
Miller, S. A. 1889 A, p. 601.
Woodward, A. S. 1889 D, p. 49.

Lisgodus affinis Newb.

Newberry, J. S. 1879 A, p. 343.
Kindle, E. M. 1898 A, p. 484.
Woodward, A. S. 1889 D, p. 49.
Subcarboniferous (St. Louis); Illinois, Missouri, Indiana.

Lisgodus curtus St. J. and Worth.

St. John and Worthen 1875 A, p. 364, pl. xA, figs. 20–22.
Keyes, C. R. 1894 A, p. 231.
Miller, S. A. 1889 A, p. 601, fig. 1143.
Woodward, A. S. 1889 D, p. 49.
Subcarboniferous (Burlington); Iowa, Illinois, Missouri.

Lisgodus selluliformis St. J. and Worth.

St. John and Worthen, 1875 A, p. 366, pl. xA, fig. 16.
Keyes, C. R. 1894 A, p. 231.
Woodward, A. S. 1889 D, p. 49.
Subcarboniferous (St. Louis); Illinois, Missouri.

Lisgodus serratus St. J. and Worth.

St. John and Worthen 1875 A, p. 365, pl. xA, figs. 17–19.
Woodward, A. S. 1889 D, p. 49.
Subcarboniferous (Burlington); Iowa, Illinois.

CALOPODUS St. J. and Worth. Type *C. apicalis* St. J. and Worth.

St. John and Worthen 1875 A, p. 408.
Miller, S. A. 1889 A, p. 589.
Woodward, A. S. 1889 D, p. 49.

Calopodus apicalis St. J. and Worth.

St. John and Worthen 1875 A, p. 408, pl. xii, figs. 16, 17.
Miller, S. A. 1889 A, p. 589, fig. 1105.
Woodward, A. S. 1889 D, p. 49.
Coal-measures, Iowa.

CTENOPETALUS Davis. Type *Petalodus serratus* Owen.

Davis, J. W. 1881 A, p. 426. (Ex. Agass. MSS.)
1882 B, p. 59.
McCoy, F. 1855 A, p. 626. (Ctenoptychius.)
Miller, S. A. 1889 A, p. 594.
Newberry, J. S. 1889 A, p. 186.
Pictet, F. J. 1854 A, p. 264. (Ctenoptychius.)
Ward, J. 1890 A, p. 141. (Ctenoptychius.)
Woodward, A. S. 1889 D, p. 49. (Syn. of Ctenoptychius.)
Woodward and Sherborn 1890 A, p. 54. (Syn. of Ctenoptychius.)
Zittel, K. A. 1890 A, p. 99.

Ctenopetalus bellulus St. J. and Worth.

St. John and Worthen 1875 A, p. 398, pl. xii, fig. 9. [C. (Petalodus.)]
Woodward, A. S. 1889 D, p. 52. (Ctenoptychius.)
Subcarboniferous (St. Louis); Iowa, Illinois.

Ctenopetalus limatulus St. J. and Worth.

St. John and Worthen 1875 A, p. 399, pl. xii, fig. 18.
Woodward, A. S. 1889 D, p. 53. (Ctenoptychius.)
Subcarboniferous (Chester); Illinois.

Ctenopetalus medius St. J. and Worth.

St. John and Worthen 1875 A, p. 400, pl. xA, fig. 26.
Woodward, A. S. 1889 D, p. 53. (Ctenoptychius.)
Subcarboniferous (Chester); Illinois.

Ctenopetalus occidentalis St. J. and Worth.

St. John and Worthen 1875 A, p. 401, pl. xii, fig. 14.
Miller, S. A. 1889 A, p. 594, fig. 1120.
Woodward, A. S. 1889 D, p. 53. (Ctenoptychius.)
Coal-measures; Iowa.

Ctenopetalus vinosus St. J. and Worth.

St. John and Worthen 1875 A, p. 396, pl. xii, fig. 13.
Woodward, A. S. 1889 D, p. 54. (Ctenoptychius.)
Subcarboniferous (Keokuk); Iowa.

CTENOPTYCHIUS Agassiz. Type *C. apicalis* Agassiz.

Agassiz, L. 1843 B (1833), iii, p. 99.
1844 A.
Barkas, W. J. 1873 A, p. 18.
1874 A, pp. 439, 482, 583.
Davis, J. W. 1881 A, p. 425.
Jaekel, O. 1896 B, p. 201.
1899 A, p. 286.
Miller, S. A. 1889 A, p. 594 (Ctenoptychius); p. 605 (Peripristis).
Newberry, J. S. 1875 A, p. 52.
1889 A, p. 186.
Newberry and Worthen 1866 A, pp. 33, 73.
Nicholson and Lydekker 1889 A, p. 930.
Owen, R. 1845 B, p. 61.
Pictet, F. J. 1854 A, p. 264.
St. John, O. 1870 A, p. 434. (Peripristis, type *P. semicircularis*.)
1872 A, p. 241. (Peripristis.)

Stock, T. 1882 A.
1885 B, p. 227.
Woodward, A. S. 1889 D, p. 49.
Woodward and Sherborn 1890 A, p. 54.
Zittel, K. A. 1890 A, p. 99.

Ctenoptychius acuminatus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 402, pl. xA, figs. 6–6*d*. (Pristodus?)
Lesley, J. P. 1889 A, p. 745, figures. (Pristodus?)
Woodward, A. S. 1889 D, p. 53.
Subcarboniferous (Kinderhook); Iowa.

Ctenoptychius cristatus Dawson.

Dawson, J. W. 1868 A, p. 209, fig. 52.
1878 A, p. 209, fig. 52.
Lesley, J. P. 1895 A, pl. dlxx.
Miller, S. A. 1889 A, p. 594, fig. 1121.
Woodward, A. S. 1889 D, p. 56.
Coal-measures; Nova Scotia.

Ctenoptychius pertenuis St. J. and Worth.

St. John and Worthen 1875 A, p. 382, pl. xA, fig. 27.
Woodward, A. S. 1889 D, p. 53.
Subcarboniferous (Chester); Illinois.

Ctenoptychius semicircularis Newb. and Worth.

Newberry and Worthen 1866 A, p. 72, pl. iv, figs. 18–18*b*.
Kindle, E. M. 1898 A, p. 484 (Ctenoptychius); p. 485 (Peripristis).
Miller, S. A. 1889 A, p. 605, fig. 1156. (Peripristis.)
Newberry, J. S. 1875 A, p. 52, pl. lviii, fig. 14.
St. John, O. 1870 A, p. 434. (Peripristis.)
1872 A, p. 242, pl. iii, figs. 3, 4; pl. iv, figs. 20–20*b*.
Woodward, A. S. 1889 D, p. 53.
Coal-measures; Ohio, Indiana, Nebraska.

Ctenoptychius stevensoni St. J. and Worth.

St. John and Worthen 1875 A, p. 383, pl. xii, fig. 15.
Woodward, A. S. 1889 D, p. 54.
Coal-measures; West Virginia.

HARPACODUS St. J. and Worth. Type *H. occidentalis* St. J. and Worth.

St. John and Worthen 1875 A, p. 354. (Ex. Agass. MSS.)
Davis, J. W. 1881 A, p. 426.
1883 A, p. 514.
Miller, S. A. 1889 A, p. 598.
Newberry, J. S. 1889 A, p. 186.
Woodward, A. S. 1889 D, p. 49. (Syn. of Ctenoptychius.)
Zittel, K. A. 1890 A, p. 99.

Harpacodus compactus St. J. and Worth.

St. John and Worthen 1875 A, p. 355, pl. xA, figs. 1–1*b*.
Woodward, A. S. 1889 D, p. 53. (Ctenoptychius).
Subcarboniferous (Chester); Illinois.

Harpacodus occidentalis St. J. and Worth.

St. John and Worthen 1875 A, p. 355, pl. xA, figs. 2–2*d*.
Keyes, C. R. 1894 A, p. 230.
Miller, S. A. 1889 A, p. 599, fig. 1135.
Woodward, A. S. 1889 D, p. 53. (Ctenoptychius.)
Subcarboniferous (St. Louis); Illinois, Missouri.

POLYRHIZODUS McCoy. Type *P. magnus* McCoy.

McCoy, F. 1848 A, p. 125.
Davis, J. W. 1883 A, pp. 485–499.
Jaekel, O. 1895 B.
1899 A, p. 278.
McCoy, F. 1855 A, p. 641.
Miller, S. A. 1889 A, p. 594 (Dactylodus); p. 607 (Polyrhizodus).
Newberry, J. S. 1897 A, p. 294. (Dactylodus.)
Newberry and Worthen 1866 A, p. 33 (Dactylodus, type *D. princeps*); p. 34 (Polyrhizodus).
Nicholson and Lydekker 1889 A, p. 930. (Polyrhizodus, Dactylodus.)
Pictet, F. J. 1854 A, p. 271.
Trautschold, H. 1874 B, p. 294 (Dactylodus); p. 296 (Polyrhizodus).
Woodward, A. S. 1889 D, p. 56.
Zittel, K. A. 1890 A, p. 97.

Polyrhizodus amplus St. J. and Worth.

St. John and Worthen 1875 A, p. 387, pl. xiii, fig. 13.
Keyes, C. R. 1894 A, p. 232.
Lesley, J. P. 1889 A, p. 732, figures.
Woodward, A. S. 1889 D, p. 59.
Subcarboniferous (St. Louis); Illinois, Missouri.

Polyrhizodus carbonarius St. J. and Worth.

St. John and Worthen 1875 A, p. 389, pl. xA, figs. 24, 25; pl. xiii, fig. 1.
Lesley, J. P. 1889 A, p. 732, figures.
Woodward, A. S. 1889 D, p. 59.
Coal-measures; Illinois.

Polyrhizodus concavus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 390, pl. xiii, figs. 17, 18. (Dactylodus.)
Miller, S. A. 1889 A, p. 594, fig. 1123. (Dactylodus.)
Quenstedt, F. A. 1885 A, p. 294, pl. xxiii, fig. 31. (Dactylodus.)
Woodward, A. S. 1889 D, p. 59.
Subcarboniferous (St. Louis); Illinois.

Polyrhizodus dentatus Newb. and Worth.
Newberry and Worthen 1866 A, p. 50, pl. iii, figs. 10, 10*a*.
Lesley, J. P. 1889 A, p. 733, figures.
Woodward, A. S. 1889 D, p. 59.
Subcarboniferous (Chester); Illinois.

Polyrhizodus digitatus (Leidy).
Leidy, J. 1857 H, p. 90, pl. v, figs. 27-29. (Ctenoptychius.)
Newberry and Worthen 1866 A, p. 47. (Dactylodus.)
1866 A, p. 47, pl. iii, figs. 7, 7*a*. (Dactylodus lobatus.)
Woodward, A. S. 1889 D, p. 59. (P. lobatus.)
Subcarboniferous (St. Louis); Illinois, Missouri.

Polyrhizodus excavatus (St. J. and Worth.).
St. John and Worthen 1866 A, p. 392; pl. xiii, fig. 16. (Dactylodus.)
Woodward, A. S. 1889 D, p. 59.
Subcarboniferous (Chester); Illinois.

Polyrhizodus inflexus (Newb. and Worth.).
Newberry and Worthen 1866 A, p. 48, pl. iii, figs. 8, 8*a*. (Dactylodus.)
Woodward, A. S. 1889 D, p. 59.
Subcarboniferous (Chester); Illinois.

Polyrhizodus latus Newberry.
Newberry, J. S. 1897 A, p. 296, pl. xxiii, figs. 7, 7*a*. (Dactylodus.)
Subcarboniferous (St. Louis); Illinois.

Polyrhizodus littoni Newb. and Worth.
Newberry and Worthen 1870 A, p. 357, pl. iv, figs. 10, 10*a*.
Keyes, C. R. 1894 A, p. 232.
Kindle, E. M. 1898 A, p. 485.
Lesley, J. P. 1889 A, p. 733, figures.
Miller, S. A. 1889 A, p. 607, fig. 1160.
Newberry, J. S. 1889 A, p. 209, pl. xix, figs. 5, 6.
Woodward, A. S. 1889 D, p. 59.
Subcarboniferous (St. Louis); Missouri, Indiana.

Polyrhizodus minimus (St. J. and Worth.).
St. John and Worthen 1875 A, p. 391, pl. xiii, fig. 19. (Dactylodus.)
Woodward, A. S. 1889 D, p. 60.
Subcarboniferous (St. Louis); Illinois.

Polyrhizodus modestus Newb.
Newberry, J. S. 1875 A, p. 50, pl. lviii, figs. 10, 10*a*.
Lesley, J. P. 1889 A, p. 733, figures.
Miller, S. A. 1889 A, p. 607, fig. 1161.
Woodward, A. S. 1889 D, p. 60.
Subcarboniferous; Ohio.

Polyrhizodus nanus St. J. and Worth.
St. John and Worthen 1875 A, p. 386, pl. xiii, fig. 15.
Lesley, J. P. 1889 A, p. 733, figures.
Woodward, A. S. 1889 D, p. 60.
Subcarboniferous (Keokuk); Iowa.

Polyrhizodus piasaënsis St. J. and Worth.
St. John and Worthen 1875 A, p. 386, pl. xiii, fig. 12.
Lesley, J. P. 1889 A, p. 734, figures.
Woodward, A. S. 1889 D, p. 60.
Subcarboniferous (Warsaw); Illinois.

Polyrhizodus ponticulus Newb. and Worth.
Newberry and Worthen 1866 A, p. 51, pl. iii, figs. 11, 11*a*.
Lesley, J. P. 1889 A, p. 734, figures.
Woodward, A. S. 1889 D, p. 60.
Subcarboniferous (Chester); Illinois.

Polyrhizodus porosus Newb. and Worth.
Newberry and Worthen 1866 A, p. 49, pl. iii, figs. 9, 9*a*.
Lesley, J. P. 1889 A, p. 734, figures.
Woodward, A. S. 1889 D, p. 60.
Subcarboniferous (Burlington); Illinois, Iowa.

Polyrhizodus princeps (Newb. and Worth.).
Newberry and Worthen 1866 A, p. 45, pl. iii, figs. 8-8*b*. (Dactylodus.)
Hambach, G. 1890 A, p. 80.
Jaekel, O. 1899 A, p. 285. (Dactylodus.)
Newberry, J. S. 1897 A, p. 295, pl. xxiii, figs. 5, 5*a*, 6. (Dactylodus.)
Woodward, A. S. 1889 D, p. 60.
Subcarboniferous (St. Louis); Illinois, Missouri.

Polyrhizodus rectus (Newb.).
Newberry, J. S. 1897 A, p. 296, pl. xxiii, figs. 8, 9. (Dactylodus.)
Subcarboniferous (St. Louis); Illinois.

Polyrhizodus truncatus Newb. and Worth.
Newberry and Worthen 1870 A, p. 357, pl. iii, figs. 16, 16*a*.
Woodward, A. S. 1889 D, p. 60.
Subcarboniferous (Burlington); Illinois.

Polyrhizodus williamsi St. J. and Worth.
St. John and Worthen 1875 A, p. 384, pl. xA, fig. 23; pl. xiii, fig. 11.
Keyes, C. R. 1894 A, p. 232.
Lesley, J. P. 1889 A, p. 734, figures.
Woodward, A. S. 1889 A, p. 60.
Subcarboniferous (Keokuk); Missouri, Io

PSAMMODONTIDÆ.

Koninck, L. G. de 1878 A, pp. 29, 38.
Davis, J. W. 1883 A, pp. 431, 459.
Jaekel, O. 1895 B.
1898 A, p. 49 (with subfams. Psammondontinæ, Helodontinæ, and Psephodontinæ.
Nicholson and Lydekker 1889 A, p. 984.
St. John and Worthen 1883 A, p. 197.
Woodward, A. S. 1889 D, p. 91.
1898 B, p. 50.
Zittel, K. A. 1890 A, p. 95.

PSAMMODUS Agassiz. Type *P. rugosus* Agassiz.

Agassiz, L. 1843 B (1838), iii, p. 103.
1844 A.
Davis, J. W. 1883 A, p. 459.
Günther, A. 1872 A, p. 519.
Koninck, L. G. de 1844 A, p. 615.
1878 A, p. 41.
McCoy, F. 1855 A, p. 643.
Miller, S. A. 1889 A, p. 608.
Newberry and Worthen 1866 A, p. 107.
Nicholson and Lydekker 1889 A, p. 935.
Owen, R. 1845 B, p. 59, pls. xvii, xx, xxi.
Pictet, F. J. 1854 A, p. 266.
Quenstedt, F. A. 1885 A, p. 293.
St. John and Worthen 1883 A, p. 197.
Steinmann and Döderlein 1890 A, p. 549.
Trautschold, H. 1874 B, p. 288.
Woodward, A. S. 1889 D, p. 99.
Zittel, K. A. 1890 A, p. 95.

Psammodus angularis Newb. and Worth.

Newberry and Worthen 1866 A, p. 107, pl. xi, figs. 2–2*b*.
Lesley, J. P. 1889 A, p. 784, figures (P. angularis); p. 787, figures (P. porosus?).
Miller. S. A. 1889 A, p. 609, fig. 1164. (P. porosus.)
Newberry and Worthen, 1866 A, p. 107, pl. xi, figs. 1–1*b*. ("P. porosus Ag.?").
St. John and Worthen, 1883 A, p. 222.
Woodward, A. S. 1889 D, p. 107.
Subcarboniferous (Chester); Illinois.

Psammodus antiquus Newb.

Newberry, J. S. 1857 C, p. 124.
1873 A, p. 265.
Woodward, A. S. 1889 D, p. 459.
Devonian (Corniferous); Ohio.

Psammodus cælatus St. J. and Worth.

St. John and Worthen 1883 A, p. 217, pl. xviii, fig. 1.
Hambach, G. 1890 A, p. 81.
Lesley, J. P. 1889 A, p. 784, figures.
Woodward, A. S. 1889 D, p. 107.
Subcarboniferous (St. Louis); Iowa, Missouri (*fide* Hambach).

Psammodus crassidens St. J. and Worth.

St. John and Worthen, 1883 A, p. 218, pl. xviii, figs. 2–6; text figs. *a–c*.
Lesley, J. P. 1889 A, p. 784, figures (P. crassidens) p. 788, figures (P. rugosus).
1895 A, pl. ccxxxi.
Miller, S. A. 1889 A, p. 608, fig. 1163.
Newberry and Worthen 1866 A, p. 108, pl. xi, figs. 3, 3*a*. (P. rugosus, not of Agassiz.)
Woodward, A. S. 1889 D, p. 107.
Subcarbonferous (St. Louis); Illinois, Iowa.

Psammodus glyptus St. J. and Worth.

St. John and Worthen 1883 A, p. 209, pl. xiv, figs. 5, 6.
Kindle, E. M. 1898 A, p. 485.
Lesley, J. P. 1889 A, p. 786, figures.
1895 A, pl. ccxxxi.
Newberry, J. S. 1889 A, p. 210, pl. xix, figs. 7, 8.
Woodward, A. S. 1889 D, p. 107.
Subcarboniferous (Burlington); Illinois.

Psammodus grandis St. J. and Worth.

St. John and Worthen 1883 A, p. 211, pl. xv, figs. 1–3.
Lesley, J. P. 1889 A, p. 786, figures.
1895 A, pl. ccxxxi.
Woodward, A. S. 1889 D, p. 107.
Subcarboniferous (Keokuk); Iowa.

Psammodus lovianus St. J. and Worth.

St. John and Worthen 1883 A, p. 207, pl. xiv, figs. 7–9.
Lesley, J. P. 1889 A, p. 786, figures.
1895 A, pl. ccxxxi.
Woodward, A. S. 1889 D, p. 108.
Subcarboniferous (Burlington); Illinois, Iowa.

Psammodus plenus St. J. and Worth.

St. John and Worthen 1883 A, p. 213, pl. xvi, figs. 1–4; pl. xvii, figs. 1–4.
Keyes, C. R. 1894 A, p. 235.
Lesley, J. P. 1889 A, p. 786, figures.
1895 A, pl. ccxxxii.
Woodward, A. S. 1889 D, p. 108.
Subcarboniferous (St. Louis); Missouri, Illinois, Michigan.

Psammodus reticulatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 109, pl. xi, figs. 5, 5*a*.
Hambach, G. 1890 A, p. 81.
Koninck, L. G. de 1878 A, p. 42. (P. porosus?).
Lesley, J. P. 1889 A, p. 788, figure.
1895 A, pl. ccxxxi.
St. John and Worthen 1883 A, p. 224, pl. xix, figs. 3, 5.
Woodward, A. S. 1889 D, p. 108.
Subcarboniferous (Chester); Illinois, Missouri (*fide* Hambach).

Psammodus springeri St. J. and Worth.

St. John and Worthen 1883 A, p. 202, pl. xx, figs. 4–11, and 7 text figures.
Lesley, J. P. 1889 A, p. 789, figures.
1895 A, pl. ccxxxii.
Miller, S. A. 1889 A, p. 609, figs. 1165, 1166.
Woodward, A. S. 1889 D, p. 108.
Subcarboniferous (Burlington); Iowa, Illinois.

Psammodus tumidus St. J. and Worth.

St. John and Worthen 1883 A, p. 205, pl. xiv, figs. 1–4.
Lesley, J. P. 1889 A, p. 790, figures.
Woodward, A. S. 1889 D, p. 108.
Subcarboniferous (Burlington); Illinois, Iowa.

Psammodus turgidus St. J. and Worth.

St. John and Worthen 1883 A, p. 206, pl. xv, fig. 4; text-fig. *a*.
Lesley, J. P. 1889 A, p. 790, figures.
1895 A, pl. ccxxxi.
Miller, S. A. 1889 A, p. 609, fig. 1168.
Woodward, A. S. 1889 D, p. 108.
Subcarboniferous (division beds of Burlington and Keokuk); Iowa.

Psammodus sp?

Dawson, J W. 1868 A, p. 210, fig. 54.
Lesley, J. P. 1889 A, p. 790, figure.
Coal-measures; Nova Scotia.

MAZODUS Newb. Type *M. kepleri* Newb.

Newberry, J. S. 1889 A, p. 178.
Claypole, E. W. 1896 D, p. 146.
1896 E, p. 152.
Miller, S. A. 1892 A, p. 716.

Mazodus kepleri Newb.

Newberry, J. S. 1889 A, p. 180, pl. xxi, figs. 1–3.
Claypole, E. W. 1896 D, p. 146, figs. 1, 2.
Subcarboniferous (Waverly); Ohio.

ARCHÆOBATIS Newb. Type *A. gigas* Newb.

Newberry, J. S. 1878 A, p. 190.
1879 A, p. 346.
1885 A.
Nicholson and Lydekker 1885 A.
Woodward, A. S. 1889 D, p. 108.
1890 A, p, 391.
Zittel, K. A. 1890 A, p. 96.

Archæobatis gigas Newb.

Newberry, J. S. 1878 A, p. 190.
Kindle, E. M. 1898 A, p. 484.
Newberry, J. S. 1879 A, p. 347.
1884 A.
1885 A.
Woodward, A. S. 1889 D, p. 108.
1890 A, p. 391.
Subcarboniferous (St. Louis); Indiana.

COPODUS Davis. Type *C. cornutus* Davis.

Davis, J. W. 1883 A, p. 464.
1883 A, p. 469. (Labodus.)
Eastman, C. R. 1898 A, p. 112.
Miller, S. A. 1889 A, p. 592.
1892 A, p. 716.
Newberry, J. S. 1889 A, p. 198. (Labodus.)
Nicholson and Lydekker 1889 A, p. 935.
St. John and Worthen 1883 A, p. 227; 6 text-figs.
Woodward, A. S. 1884 A, p. 271.
1889 D, p. 91.
Woodward and Sherborn 1890 A, p. 43.
Zittel, K. A. 1890 A, p. 96.

Copodus marginatus (Newb.).

Newberry, J. S. 1889 A, p. 198, pl. xix, fig. 9. (Labodus.)
Kindle, E. M. 1898 A, p. 484. (Labodus.)
Subcarboniferous (St. Louis); Indiana.

Copodus pusillus St. J. and Worth.

St. John and Worthen 1883 A, p. 231, pl. xx, fig. 1.
Woodward, A. S. 1889 D, p. 99.
Subcarboniferous (Chester); Illinois.

Copodus vanhornii St. J. and Worth.

St. John and Worthen 1883 A, p. 229, pl. xx, figs. 2, 3.
Keyes, C. R. 1894 A, p. 235.
Woodward, A. S. 1889 D, p. 99.
Subcarboniferous (St. Louis); Missouri, Illinois.

Superfamily HETERODONTOIDEA,[1] *nom. nov.*

Gill, T., 1882, in Jordan and Gilbert's Synop. Fishes N. A., p. 967. (Proarthri.)
1884 B, p. 346. (Proarthri.)
1884 C. (Proarthri.)
1893 A, p. 129. (Prosarthri.)
Jordan and Evermann 1896 A, p. 19. (Proarthri.)
Woodward, A. S. 1889 D, p. ix. ("Proarthri.")

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[1] This name is proposed in order to conform to the rule adopted by many zoologists, according to which the name of the superfamily is derived from that of a typical family.

COCHLIODONTIDÆ.

Owen, R. 1867 A.
Brown, C. 1900 A, pp. 173, 174.
Cope, E. D. 1891 N, p. 17.
1898 B, p. 26.
Davis J. W. 1882 B.
1883 A, pp. 331, 410.
1890 B.
Koninck, L. G. de 1878 A, p. 29.
Nicholson and Lydekker 1889 A, p. 939.
St. John and Worthen 1883 A, p. 201.
Traquair, R. H. 1888 A, p. 84.
Woodward, A. S. 1884 A, p. 269.
1889 D, p. 169.
1892 G.
Zittel, K. A. 1890 A, p. 68.

HELODUS Agassiz. Type *H. simplex* Agassiz.

Agassiz, L. 1843 B (1838), iii, p. 104.
1844 A.
Amer. Geologist 1888 A.
Davis, J. W. 1890 B.
Jaekel O. 1898 A, p. 50.
Koninck, L. G. de 1844 A, p. 614.
1878 A, p. 38.
McCoy, F. 1885, A, p. 630.
Miller, S. A. 1889 A, p. 599.
Newberry and Worthen 1866 A, p. 74.
1870 A, p. 365.
Nicholson and Lydekker 1889 A, p. 939.
Pictet, F. J. 1854 A, p. 266.
Quenstedt, F. A. 1885 A, p. 294.
St. John and Worthen 1875 A, p. 295.
Traquair, R. H. 1888 A, p. 84.
Trautschold, H. 1874 B, p. 288.
Ward, J. 1890 A, p. 143.
Woodward, A. S. 1884 A, p. 269.
1889 D, pp. 171, 226.
Woodward and Sherborn 1890 A, p. 92.
Zittel, K. A. 1890 A, p. 75.

Helodus angulatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 83, pl. v, figs. 9-15.
St. John and Worthen 1875 A, p. 362.
Woodward, A. S. 1889 D, p. 221.
Subcarboniferous (Burlington); Illinois.

Helodus biformis Newb. and Worth.

Newberry and Worthen 1866 A, p. 77, pl. iv, fig. 22.
St. John and Worthen 1875 A, p. 419.
Woodward, A. S. 1889 D, p. 226.
Subcarboniferous (Kinderhook): Iowa.

Helodus carbonarius Newb. and Worth.

Newberry aud Worthen 1866 A, p. 75, pl. iv, figs. 20, 20*a*.
Woodward, A. S. 1889 D, p. 226.
Coal-measures: Illinois.

Helodus coniculus Newb. and Worth.

Newberry and Worthen 1866 A, p. 75, pl. iv, figs. 19, 19*a*.
Kindle, E. M. 1898 A, p. 484.
Newberry, J. S. 1879 A, p. 344.
Wordward, A. S. 1889 D, p. 226.
Subcarboniferous (Keokuk); Illinois: (St. Louis); Indiana: (Burlington); Iowa.

Helodus consolidatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 87, pl. vi, figs. 1-2*a*.
Hambach, G. 1890 A, p. 81.
Woodward A. S. 1889 D, p. 226.
Subcarboniferous (Keokuk); Illinois, Missouri.

Helodus crenulatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 82, pl. v, figs. 7, 7*a*.
Hambach, G. 1890 A, p. 81.
Woodward, A. S. 1889 D, p. 226.
Subcarboniferous (Keokuk); Illinois, Missouri (*fide* Hambach).

Helodus dens-humani Newb. and Worth.

Newberry and Worthen 1866 A, p. 76, pl. iv, figs. 21-21*b*.
Woodward, A. S. 1889 D, p. 226.
Subcarboniferous (Keokuk); Illinois.

Helodus denticulatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 81, pl. v, figs. 6-6*b*.
St. John and Worthen 1875 A, p. 317. (Helodus?)
Woodward, A. S. 1889 D, p. 226.
Subcarboniferous (Keokuk); Illinois.

Helodus elytra Newb. and Worth.

Newberry and Worthen 1866 A, p. 78, pl. iv, fig. 23.
St. John and Worthen 1875 A, p. 299. (Chomatodus.)
1883 A, p. 95. (Helodus.)
Subcarboniferous (Keokuk); Illinois.

Helodus gibberulus Agassiz.

Agassiz, L. 1843 B (1838), iii, p. 106, pl. xii, figs. 1, 2.
Davis, J. W. 1883 A, p. 405, pl. li, fig. 19. (Lophodus.)
Newberry, J. S. 1889 A. p. 102.
Trautschold, H. 1874 A, p. 269, pl. xxvi, fig. 9.
Woodward, A. S. 1889 D, p. 219.
Carboniferous; Europe: Subcarboniferous (Waverly); Pennsylvania: ("Mountain limestone"); Illinois, Indiana.

Helodus gibbus Leidy.

Leidy, J. 1857 H, p. 88, pl. v, fig. 18.
Woodward, A. S. 1889 D, p. 226.
Subcarboniferous (Warsaw); Illinois.

Helodus lævis Newb.

Newberry, J. S. 1879 A, p. 343.
Kindle, E. M. 1898 A, p. 484.
Woodward, A. S. 1889 D, p. 226.
Subcarboniferous (St. Louis); Indiana.

Helodus limax Newb. and Worth.

Newberry and Worthen 1866 A, p. 80, pl. v, figs. 5–5*b*.
Woodward, A. S. 1889 D, p. 226.
Subcarboniferous (Burlington); Iowa.

Helodus politus Newb. and Worth.

Newberry and Worthen 1866 A, p. 79, pl. v, fig. 2.
Woodward, A. S. 1889 D, p. 227.
Subcarboniferous (Keokuk); Illinois.

Helodus rugosus Newb. and Worth.

Newberry and Worthen 1870 A, p. 359, pl. ii, figs. 10, 10*a*.
Woodward, A. S. 1889 D, p. 227.
Coal-measures; Illinois.

Helodus sulcatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 83, pl. v, figs. 16, 16*a*.
Woodward, A. S. 1889 D, p. 221.
Subcarboniferous (Keokuk); Illinois.

Helodus undulatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 82, pl. v, figs. 8–8*b*.
Woodward, A. S. 1889 D, p. 227.
Subcarboniferous (Keokuk); Illinois.

Helodus wortheni Hay.

Hay, O. P. 1899 E, p. 784.
Newberry and Worthen 1870 A, p. 360, pl. iii, figs. 15, 15*a*. (Helodus compressus; not H. compressus Newberry and Worthen 1866 A, p. 78, pl. v, fig. 1=Hybocladodus compressus.)
Subcarboniferous (Burlington); Illinois.

VENUSTODUS St. J. and Worth. Type *Chomatodus venustus* Leidy.

St. John and Worthen 1875 A, p. 344.
Miller, S. A. 1889 A, p. 613.
Woodward, A. S. 1889 D, pp. 218–225.
1889 F, p. 298.

Venustodus argutus St. J. and Worth.

St. John and Worthen 1875 A, p. 352, pl. ix, figs. 5, 6.
Lesley, J. P. 1890 A, p. 1250, figures.
Woodward, A. S. 1889 D, p. 228.
Subcarboniferous (Chester); Illinois.

Venustodus robustus St. J. and Worth.

St. John and Worthen 1875 A. p. 345, pl. ix, figs. 15–18.
Lesley, J. P. 1890 A, p. 1251, figures.
Miller, S. A. 1889 A, p. 614, fig. 1177.
Woodward, A. S. 1889 D, p. 228.
Subcarboniferous (Burlington); Iowa.

Venustodus tenuicristatus St. J. and Worth.

St. John and Worthen 1875 A, p. 348, pl. ix, figs. 19–24.
Keyes, C. R. 1894 A, p. 230.
Lesley, J. P. 1890 A. p. 1251, figures.
Woodward, A. S. 1889 D, p. 229.
Subcarboniferous (Keokuk): Illinois, Iowa, Missouri.

Venustodus variabilis St. J. and Worth.

St. John and Worthen 1875 A, p. 346, pl. ix, figs. 7–14.
Lesley, J. P. 1890 A, p. 1252, figures.
Woodward, A. S. 1889 D, p. 229.
Subcarboniferous (Burlington); Illinois, Iowa.

Venustodus venustus (Leidy).

Leidy, J. 1857 H, p. 89, pl. v, figs. 19–21. (Chomatodus.)
Hambach, G. 1890 A, p. 81. (V. leidyi.)
Lesley, J. P. 1890 A, p. 1250, figures. (V. leidyi.)
Miller, S. A. 1889 A, pp. 590, 613, 614.
Newberry and Worthen 1866 A, p. 34.
St. John and Worthen 1875 A, pp. 345, 350, pl. ix, figs. 1–4. (V. leidyi.)
Woodward, A. S. 1889 D, p. 228. (V. leidyi.)
Subcarboniferous (St. Louis); Illinois, Missouri.

XENODUS S. A. Miller. Type *Goniodus hertzeri* Newb.

Miller, S. A. 1892 A, p. 718.
Hay, O. P. 1899 E, p. 784.
Newberry, J. S. 1889 A, p. 67. (Goniodus, not of Agassiz, 1838.)

Xenodus hertzeri (Newb.).

Newberry, J. S. 1889 A, p. 69, pl. xxvii, figs. 11–15. (Goniodus.)
Miller, S. A. 1892 A, p. 718.
Devonian (Huron Shale); Ohio.

PERIPLECTRODUS St. J. and Worth. Type *P. warreni* St. J. and Worth.

St. John and Worthen 1875 A, p. 324.
Miller, S. A. 1889, p. 605.
Woodward, A. S. 1889 D, p. 228.

Periplectrodus compressus St. J. and Worth.

St. John and Worthen 1875 A, p. 326, pl. viii, figs. 26–26*c*.
Lesley, J. P. 1889 A, p. 622, figures.
Woodward, A. S. 1889 D, p. 229.
Subcarboniferous (St. Louis); Illinois.

Periplectrodus expansus St. J. and Worth.

St. John and Worthen 1875 A, p. 327, pl. viii, figs. 27–27*c*.
Lesley, J. P. 1889 A, p. 623, figures.
Woodward, A. S. 1889 D, p. 229.
Subcarboniferous (Chester); Illinois.

Periplectrodus warreni St. J. and Worth.

St. John and Worthen 1875 A, p. 325, pl. viii, figs. 25–25*c*.
Lesley, J. P. 1889 A, p. 624, figures.
Woodward, A. S. 1889 D, p. 229.
Subcarboniferous (Burlington); Iowa.

PSEPHODUS Morris and Roberts. Type *Cochliodus magnus* Portlock.

Morris and Roberts, 1862, Quart. Jour. Geol. Soc., xviii, p. 101.
Amer. Geologist 1888 A.
Davis, J. W. 1882 B, p. 54
1883 A, p. 438.
Jaekel, O. 1896 A, p. 50.
Koninck, L. G. de 1878 A, p. 59.
Miller, S. A. 1889 A, p. 610 (Psephodus); p. 612 (Tæniodus, in part.)
Newberry and Worthen 1866 A, p. 92. (Aspidodus, type *A. convolutus*.)
Nicholson and Lydekker 1889 A, p. 989.
St. John and Worthen, 1883 A, pp. 59, 63; p. 78 (Tæniodus).
Traquair, R. H. 1885 A.
1885 B.
1888 A, p. 84.
Woodward, A. S. 1884 A, p. 270.
1889 D, p. 176.
1892 G, p. 674.
Zittel, K. A. 1890 A, p. 72.

Psephodus crenulatus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 93, pl. viii, figs. 3-11. (Aspidodus.)
Hambach, G. 1890 A, p. 80. (Aspidodus.)
Kindle, E. M. 1898 A, p. 484. (Aspidotus.)
Newberry, J. S. 1879 A, p. 341. (Aspidodus.)
Newberry and Worthen 1866 A, p. 94, pl. viii, figs. 12, 22*a*. (Aspid. convolutus.)
St. John and Worthen 1875 A, p. 419.
1883 A, pp. 63, 67, 69.
Woodward, A. S. 1889 D, p. 184.
Subcarboniferous (Chester); Illinois, Kentucky, Missouri, Indiana.

Psephodus latus St. J. and Worth.

St. John and Worthen 1883 A, p. 72, pl. ii, figs. 1-3.
Keyes, C. R. 1894 A. p. 232.
Lesley, J. P. 1889 A, p. 791, figures.
Woodward, A. S. 1889 D, p. 184.
Subcarboniferous (St. Louis); Illinois, Missouri.

Psephodus lunulatus St. J. and Worth.

St. John and Worthen 1883 A, p. 74, pl. ii, fig. 4. (P. cunulatus, *errore*).
Lesley, J. P. 1889 A, p. 791, figures.
Woodward, A. S. 1889 D, p. 185.
Subcarboniferous (Chester); Illinois.

Psephodus obliquus St. J. and Worth.

St. John and Worthen 1883 A, p. 66, pl. i, figs. 1-5
Lesley, J. P. 1889 A, p. 791, figures.
1895 A, pl. ccxxxii.
Woodward, A. S. 1889 D, p. 184.
Subcarboniferous (Kinderhook); Iowa.

Psephodus placenta (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 80, pl. v, figs. 4, 4*a*. (Helodus.)
Lesley, J. P. 1889 A, p. 792, figures.
1895 A, pl. ccxxxii.
St. John and Worthen 1883 A, p. 69, pl. ii, figs. 5-8.
Woodward, A. S. 1889 D, p. 184.
Subcarboniferous (Kinderhook); Iowa.

Psephodus politus Newb.

Newberry, J. S. 1897 A, p. 301, pl. xxiv, figs. 13-23. [P. (Helodus); not H. politus of Newb. and Worth.]
Subcarboniferous (Burlington); Illinois.

Psephodus regularis (St. J. and Worth.).

St. John and Worthen 1883 A, p. 77, pl. xiii, fig. 11. (Tæniodus.)
Kindle, E. M. 1898 A, p. 485. (Tæniodus.)
Lesley, J. P. 1890 A, p. 1178, figs. (Teniodus.)
1895 A, pl. ccxxxiv. (Teniodus.)
Woodward, A. S. 1889 D, p. 185.
Subcarboniferous (Warsaw); Indiana.

Psephodus? reticulatus St. J. and Worth.

St. John and Worthen 1875 A, p. 417, pl. vi, figs. 19-24.
Leslie, J. P. 1889 A, p. 793, figures.
1895 A, pl. ccxxxii.
Woodward, A. S. 1889 D, p. 185.
Subcarboniferous (Kinderhook); Iowa.

Psephodus? symmetricus St. J. and Worth.

St. John and Worthen 1883 A, p. 71, pl. i, figs. 6-7*d*.
Lesley, J. P. 1889 A, p. 793, figures.
1895 A, pl. ccxxxii.
Woodward, A. S. 1889 D, p. 185.
Subcarboniferous (Kinderhook); Iowa.

SANDALODUS Newb. and Worth. Type, none specified.

Newberry and Worthen 1866 A, p. 102.
Davis, J. W. 1883 A, p. 436.
Koninck, L. G. de 1878 A, p. 62.
Miller, S. A. 1889 A, p. 612.
Newberry and Worthen 1866 A, p. 111. (Trigonodus, type *T. major*.)
Nicholson and Lydekker 1889 A, p. 939.
St. John and Worthen 1883 A, p. 184.
Woodward, A. S. 1889 D, p. 185.
Zittel, K. A. 1890 A, p. 72.

Sandalodus angustus Newb. and Worth.

Newberry and Worthen 1866 A, p. 108, pl. x, fig. 3.
Lesley, J. P. 1890 A, p. 920, figure.
1895 A, pl. ccxxxii.
Woodward, A. S. 1889 D, p. 187.
Subcarboniferous (Keokuk); Illinois.

Sandalodus crassus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 91, pl. viii, figs. 2, 2*a*. (Cochliodus? crassus, not Sandalodus crassus Newb. and Worth. 1870=S. spatulatus Newb. and Worth.)
Keyes, C. R. 1894 A, p. 234. (S. lævissimus, S. crassus.
Lesley, J. P. 1889 A, p. 789, figure. (Psammodus semicylindricus.)
1890 A, p. 921, figure. (S. grandis, S. lævissimus.)
1895 A, pl. ccxxxii (S. grandis); pl. ccxxxiii (S. lævissimus).
Newberry, J. S. 1897 A, p. 298 (S. grandis.)
Newberry and Worthen 1866 A, p. 105, pl. x, fig. 9 (Sandalodus grandis); p. 109, pl. xi, figs. 4, 4*a* (Psammodus? semicylindricus); p. 110, pl. xi, figs. 6, 6*a* (P? rhomboideus),
St. John and Worthen 1883 A, p. 186, pl. xii, figs. 8, 9. (S. lævissimus.)
Woodward, A. S. 1889 D, p. 188. (S. lævissimus.)
Subcarboniferous; Illinois, Iowa, Missouri, Indiana.?

Sandalodus ellipticus Newb.

Newberry, J. S. 1897 A, p. 299, pl. xxiv, fig. 2.
Subcarboniferous (Kinderhook); Iowa.

Sandalodus? minor (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 112, pl. xi, figs. 7, 7*a*. (Trigonodus.)
Kindle, E. M. 1898 A, p. 485.
Lesley, J. P. 1890 A, p. 1219, figures. (Trigonodus.)
Newberry, J. S. 1879 A, p. 341. (Trigonodus.)
Woodward, A. S. 1889 D, p. 185. (Psephodus?.)
Subcarboniferous (Keokuk); Illinois, (St. Louis,) Indiana.

Sandalodus parvulus Newb. and Worth.

Newberry and Worthen 1866 A, p. 102, pl. x, fig. 1.
Keyes, C. R. 1894 A, p. 233.
Lesley, J. P. 1890 A, p. 921, figures.
St. John and Worthen 1883 A, p. 107, pl. iv, figs. 4–8. (Stenopterodus.)
Woodward, A. S. 1889 D, pp. 190, 217.
Subcarboniferous (St. Louis); Illinois, Missouri.

Sandalodus rhomboideus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 100, pl. ix, fig. 8. (Deltodus.)
Keyes, C. R. 1894 A, p. 234. (S. spatulatus.)
Lesley, J. P. 1889 A, p. 789, figure. (Psammodus.)
1890 A, p. 922, figures. (S. spatulatus.)
Miller, S. A. 1889 A, p. 612, fig. 1175. (S. spatulatus.)
Newberry, J. S. 1889 A, p. 204, pl. xxi, figs. 6–8. (S. crassus.)
Newberry and Worthen 1866 A, p. 108, pl. x, fig. 2. (S. spatulatus.)
1870 A, p. 369, pl. iv, figs. 3, 3*a*. (S. crassus.)
St. John and Worthen 1883 A, p. 188, pl. xii, fig. 7. (S. spatulatus.)
Woodward, A. S. 1889 D, p. 190. (S. spatulatus.)
Subcarboniferous (St. Louis), Illinois, Missouri.

Sandalodus sp?

St. John and Worthen 1883 A, p. 187, pl. xii, figs. 5, 6.
Subcarboniferous (Warsaw); Illinois.

ORTHOPLEURODUS St. J. and Worth. Type *Sandalodus carbonarius* Newb. and Worth. = *O. angularis* (Newb. and Worth.).

St. John and Worthen 1883 A, pp. 59, 191.
Miller, S. A. 1889 A, p. 604.
Woodward, A. S. 1889 D, p. 188. (Syn. of Sandalodus.)
Zittel, K. A. 1890 A, p. 72.

Orthopleurodus angularis (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 97, pl. ix, fig. 1. (Deltodus.)
Keyes, C. R. 1894 A, p. 234. (O. carbonarius.)
Kindle, E. M. 1898 A, p. 485. (O. carbonarius.)
Lesley, J. P. 1889 A, p. 568, figures. (O. carbonarius.)
Lesley, J. P. 1890 A, p. 920, figures. (Sandalodus carbonarius.)
1895 A, pl. dlxxi. (O. carbonarius.)
Newberry, J. S. 1889 A, p. 200, pl. xix, fig. 17. (O. carbonarius.)
Newberry and Worthen 1866 A, p. 104, pl. x, figs. 4, 5. (Sandalodus carbonarius.)
St. John, O. 1870 A, p. 436 (Xystrodus? occidentalis); p. 437 (Deltodus? angularis).
St. John, O. 1872 A, p. 244, pl. iv, figs. 18*a*–18*d* (Xystrodus occidentalis.)
St. John and Worthen 1883 A, pp. 177, 192, pl. xiii, figs. 6, 8. (O. carbonarius.)
Woodward, A. S. 1889 D, p. 188. (O. carbonarius.)
Coal-measures; Indiana, Illinois, Iowa, Missouri, Kansas, and Nebraska.

Orthopleurodus convexus St. J. and Worth.

St. John and Worthen 1883 A, p. 193, pl. xii, figs. 4, 5.
Lesley, J. P. 1889 A, p. 569, figures.
Woodward, A. S. 1889 D, p. 190. (Sandalodus.)
Coal-measures; West Virginia.

Orthopleurodus novo-mexicanus St. J. and Worth.

St. John and Worthen 1883 A, p. 195, pl. xiii, figs. 1–3.
Lesley, J. P. 1889 A, p. 569, figures.
Woodward, A. S. 1889 D, p. 190 (Sandalodus).
Subcarboniferous; New Mexico.

PLATYODUS Newb. Type *P. lineatus* Newb.

Newberry, J. S. 1875 A, p. 58.
Miller, S. A. 1889 A, p. 606.
Woodward, A. S. 1889 D, p. 191.

Platyodus lineatus Newb,

Newberry, J. S. 1875 A, p. 58, pl. lix, figures 1, 2.
Lesley, J. P. 1889 A, p. 691, figure.
Miller, S. A. 1889 A, p. 607, figure 1159.
Subcarboniferous (Waverly); Kentucky.

VATICINODUS St. J. and Worth. Type *V. vetustus* St. J. and Worth.

St. John and Worthen 1883 A, pp. 59, 80.
Miller, S. A. 1889 A, p. 613.
Woodward, A. S. 1889 D, pp. 186, 190.
Zittel, K. A. 1890 A, p. 69.

Vaticinodus? carbonarius St. J. and Worth.

St. John and Worthen 1883 A, p. 88, pl. iv, fig. 20.
Lesley, J. P. 1890, A, p. 1247, figure.
Woodward, A. S. 1889 D, p. 190.
Lower Coal-measures; Illinois.

Vaticinodus discrepans St. J. and Worth.

St. John and Worthen 1883 A, p. 83, pl. iii, figs. 2, 3.
Lesley, J. P. 1890 A, p. 1247, figure.
Woodward, A. S. 1889 D, p. 190.
Subcarboniferous (Burlington); Iowa.

Vaticinodus? lepis St. J. and Worth.

St. John and Worthen 1883 A, p. 88, pl. iv, fig. 21.
Lesley, J. P. 1890 A, p. 1249, figure.
Woodward, A. S. 1889 D, p. 191.
Upper Coal-measures; Illinois.

Vaticinodus ? similis St. J. and Worth.

St. John and Worthen 1883 A, p. 86, pl. iv, figs. 17–19.
Lesley, J. P. 1890 A, p. 1249, figures.
Woodward, A. S. 1889 D, p. 191.
Subcarboniferous (Chester); Illinois.

Vaticinodus ? simplex St. J. and Worth.

St. John and Worthen 1883 A, p. 84, pl. iv, figs. 22–26.
Keyes, C. R. 1894 A, p. 233.
Lesley, J. P. 1890 A, p. 1250, figures.
Woodward, A. S. 1889 D, p. 191.
Subcarboniferous (St. Louis); Illinois, Missouri, Iowa.

Vaticinodus vetustus St. J. and Worth.

St. John and Worthen, 1883 A, p. 82, pl. iii, fig. 1.
Lesley, J. P. 1890 A, p. 1250.
Newberry, J. S. 1897 A, p. 300.
Woodward, A. S. 1889 D, pp. 186, 190. (Sandalodus.)
Subcarboniferous (Kinderhook); Iowa.

PLATYXYSTRODUS Hay. Type *Cochiliodus striatus* McCoy.

Hay, O. P. 1899 E, p. 785.
Davis, J. W. 1886 A, p. 153. (Xystrodus; not of Plieninger, 1860.)
Miller, S. A. 1889 A, p. 614. (Xystrodus.)
Morris and Roberts, 1862, Quart. Jour. Geol. Soc., xviii, p. 101. (Xystrodus, type *Cochiliodus striatus* McCoy.)
St. John and Worthen 1883 A, pp. 59, 175. (Xystrodus.)
Woodward, A. S. 1889 D, p. 192. (Xystrodus.)
Zittel, K. A. 1890 A, p. 72. (Xystrodus.)

Platyxystrodus bellulus (St. J. and Worth.).

St. John and Worthen 1883 A, p. 183, pl. viii, fig. 3. (Xystrodus.)
Hay, O. P. 1899 E, p. 785.
Lesley, J. P. 1890 A, p. 1264, figs. (Xystrodus.)
Woodward, A. S. 1889 D, p. 195. (Xystrodus.)
Lower Coal-measures; Illinois.

Platyxystrodus imitatus (St. J. and Worth.).

St. John and Worthen 1883 A, p. 180, pl. viii, fig. 2. (Xystrodus.)
Hay, O. P. 1899 E, p. 785.
Keyes, C. R. 1894 A, p. 233. (Xystrodus.)
Lesley, J. P.; 1890 A, p. 1264, figure. (Xystrodus.)
Woodward, A. S. 1889 D, p. 195. (Xystrodus.)
Subcarboniferous (St. Louis); Illinois, Iowa, Missouri.

Platyxystrodus inconditus (St. J. and Worth.).

St. John and Worthen 1883 A, p. 179, pl. viii, fig. 1. (Xystrodus.)
Hay, O. P. 1899 A, p. 785.
Lesley, J. P. 1890 A, p. 1264, figure. (Xystrodus.)
Woodward, A. S. 1889 D, p. 195. (Xystrodus.)
Subcarboniferous (Keokuk); Illinois, Iowa.

Platyxystrodus simplex (St. J. and Worth).

St. John and Worthen 1883 A, p. 178, pl. viii, figs. 4, 5. (Xystrodus.)
Davis, J. W. 1886 A, p. 153. (Xystrodus.)
Hay, O. P. 1899 E, p. 785.
Lesley, J. P. 1890 A, p. 1265, figure. (Xystrodus.)
Woodward, A. S. 1889 D, p. 195. (Xystrodus.)
Subcarboniferous (Burlington); Illinois, Iowa.

Platyxystrodus verus (St. J. and Worth).

St. John and Worthen 1883 A, p. 181, pl. viii, figs. 6, 7. (Xystrodus.)
Hay, O. P. 1899 E, p. 785.
Lesley, J. P. 1890 A, p. 1265, figure. (Xystrodus.)
Woodward, A. S. 1889 D, p. 194. (Xystrodus.)
Subcarboniferous (Chester); Illinois.

ICANODUS S. A. Miller. Type *Tomodus convexus* St. J. and Worth.

Miller, S. A. 1892 A, p. 716.

Davis, J. W. 1883 A, p. 446. (Tomodus, preoccupied by Trautschold, 1879.)

1886 A, p. 153. (Tomodus.)

Hay, O. P. 1899 E, p. 785.

Miller, S. A. 1889 A, p. 613. (Tomodus.)

St. John and Worthen 1883 A, pp. 59, 171. (Tomodus.)

Woodward, A. S. 1889 D, p. 191. (Tomodus.)

Zittel, K. A. 1890 A, p. 72. (Tomodus.)

Icanodus limitaris (St. J. and Worth).

St. John and Worthen 1883 A, p. 173, pl. xiii, fig. 12. (Tomodus; called on explanation of plate "Teniodus regularis.")

Hay, O. P. 1899 E, p. 785.

Miller, S. A. 1892 A, p. 716.

Woodward, A. S. 1889 D, p. 192. (Tomodus.)

Subcarboniferous (Burlington); Iowa.

STENOPTERODUS St. J. and Worth. Type, none specified; *S. planus* St. J. and Worth. may be taken.

St. John and Worthen 1883 A, pp. 59, 101.

Miller, S. A. 1889 A, p. 612.

Woodward, A. S. 1889 D, p. 217.

Stenopterodus elongatus St. J. and Worth.

St. John and Worthen 1883 A, p. 106, pl. iv, figs. 1–3.

Woodward, A. S. 1889 D. p. 217.

Subcarboniferous (Warsaw); Illinois.

Stenopterodus planus St. J. and Worth.

St. John and Worthen 1883 A, p. 102, pl. iv, figs. 9–14.

Woodward, A. S. 1889 D, p. 217.

Subcarboniferous (Burlington); Illinois, Iowa.

Stenopterodus spindet.

St. John and Worthen 1883 A, p. 105, pl. iv, figs. 15, 16.

Subcarboniferous (Keokuk); Illinois.

DELTODOPSIS St. J. and Worth. Type *D. angustus* (Newb. and Worth.).

St. John and Worthen 1883 A, p. 158.

Miller, S. A. 1889 A, p. 595.

Newberry, J. S. 1889 A, p. 186.

Woodward, A. S. 1889 D, p. 217.

Zittel, K. A. 1890 A, p. 72.

Deltodopsis affinis St. J. and Worth.

St. John and Worthen 1883 A, p. 160, pl. xi, fig. 1.

Woodward, A. S. 1889 D, p. 217.

Subcarboniferous (Warsaw); Illinois.

Deltodopsis angustus (Newb. and Worth.).

Newberry and Worthen 1870 A, p. 368, pl. iii, fig. 7. (Deltodus.)

St. John and Worthen 1883 A, p. 163, pl. xi, figs. 7–10.

Woodward, A. S. 1889 D, pp. 200, 218. (Deltodus.)

Subcarboniferous (Chester); Illinois.

Deltodopsis? bialveatus St. J. and Worth.

St. John and Worthen 1883 A, p. 169, pl. xi, figs. 15–18. (Including varieties *keokuk* and *convexus*.)

Woodward, A. S. 1889, D, p. 217.

Subcarboniferous (Burlington); Iowa: (St. Louis); Illinois.

Deltodopsis convolutus St. J. and Worth.

St. John and Worthen 1883 A. p. 165, pl. xi, figs. 11, 12

Woodward, A. S. 1889 D. p. 217.

Subcarboniferous (Burlington); Iowa, Illinois.

Deltodopsis? exornatus St. J. and Worth.

St. John and Worthen 1883 A, p. 168, pl. xi, fig. 14.

Woodward, A. S. 1889 D, p. 218.

Subcarboniferous (Warsaw); Illinois.

Deltodopsis? inflexus St. J. and Worth.

St. John and Worthen 1883 A, p. 167, pl. xi, fig. 13.

Woodward. A. S 1889 D, p. 218.

Subcarboniferous (Keokuk); Illinois.

Deltodopsis sancti-ludovici St. J. and Worth.

St. John and Worthen 1883 A, p. 161, pl. xi, figs. 2–6.

Keyes, C. R. 1894 A, p. 235.

Woodward, A. S. 1889 D, p. 218.

Subcarboniferous (St. Louis); Illinois, Iowa, Missouri.

DELTODUS Morris and Roberts. Type *Pœcilodus sublævis* (McCoy).

Morris and Roberts, 1862, Quart. Jour. Geol. Soc., xviii, p. 100. (Ex Agassiz MSS.)

Davis, J. W. 1883 A, p. 427.

Koninck, L. G. de 1878 A, p. 63.

Miller, S. A. 1889 A, p. 595 (Deltodus); p. 612 (Tæniodus).

Newberry, J. S. 1889 A, p. 186.

Newberry and Worthen 1866 A, p. 95.

St. John and Worthen 1883 A, pp. 60, 141 (Deltodus); pp. 59, 75 (Tæniodus).

Traquair, R. H. 1888 A, p. 84.

Trautschold, H. 1879 B, p. 54.

Woodward, A. S. 1884 A, p. 270.
1889 A, p. 195.
1892 G, fig. 6.
Woodward and Sherborn 1890 A, p. 60.
Zittel, K. A. 1890 A, p. 73.

Deltodus alatus Newb. and Worth.

Newberry and Worthen 1870 A, p. 368, pl. ii, fig. 6.
Woodward, A. S. 1889 D, p. 199.
Subcarboniferous (Keokuk); Illinois.

Deltodus cinctulus St. J. and Worth.

St. John and Worthen 1883 A, p. 146, pl. ix, figs. 6, 7.
Keyes, C. R. 1894 A, p. 235.
Kindle, E. M. 1898 A, p. 484.
Woodward, A. S. 1889 D, p. 200.
Subcarboniferous (Warsaw); Illinois, Missouri, Indiana.

Deltodus cinctus Newb.

Newberry, J. S. 1879 A, p. 344.
Woodward, A. S. 1889 D, p. 200.
Subcarboniferous (St. Louis); Iowa.

Deltodus cingulatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 99, pl. ix, fig. 6.
Woodward, A. S. 1889 D, p. 200.
Subcarboniferous (Chester); Illinois.

Deltodus complanatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 98, pl. ix, fig. 4.
Koninck, L. G. de 1878 A, p. 64.
Lesley, J. P. 1890 A, p. 920, figure (Sandalodus); p. 1218, figures (Trigonodus major).
1895 A, pl. ccxxxiii. (Sandalodus.)
Newberry, J. S. 1897 A, p. 298, pl. xxiv, figs. 1-7.
Newberry and Worthen 1866 A, p. 112, pl. xi, 8-9*a*. (Trigonodus major.)
St. John and Worthen 1883 A, p. 184, pl. xii, figs. 1-4. (Sandalodus.)
Woodward, A. S. 1889 D, p. 189. (Sandalodus.)
Subcarboniferous (Burlington); Iowa.

Deltodus fasciatus Newb. and Worth.

Newberry and Worthen 1870 A, p. 366, pl. iii, fig. 17.
Lesley, J. P. 1890 A, p. 1172, figures. (Teniodus faciatus.)
1895 A, pl. ccxxxiv. (Teniodus faciatus.)
St. John and Worthen 1883 A, p. 76, pl. xiii, fig 9. (Tæniodus fasciatus?)
Woodward, A. S. 1889 D, p. 200.
Subcarboniferous (Keokuk); Illinois.

Deltodus grandis Newb.

Newberry, J. S. 1879 A, p. 344.
Kindle, E. M. 1898 A, p. 484 (D. grandis?).
Newberry, J. S. 1897 A, p. 297.
Newberry & Worthen 1866 A, p. 101, pl. ix, figs. 9, 9*a*.
Woodward, A. S., 1889 D, p. 188. (Syn. of Sandalodus lævissimus.)
Subcarboniferous (Keokuk); Illinois, Indiana.

Deltodus inornatus Newb.

Newberry, J. S. 1897 A, p. 298, pl. xxiii, figs. 10, 11.
Subcarboniferous (Kinderhook); Iowa.

Deltodus intermedius St. J. and Worth.

St. John and Worthen 1883 A, p. 153, pl. ix, figs. 14, 15.
Keyes, C. H. 1891 A, p. 265. (D. intermedius?)
Woodward, A. S. 1889 D, p. 200.
Subcarboniferous (St. Louis); Illinois, Iowa: Coal-measures; Iowa.

Deltodus latior St. J. and Worth.

St. John and Worthen 1883 A, p. 145, pl. ix, figs. 11, 12.
Woodward, A. S. 1889 D, p. 200.
Subcarboniferous (Keokuk); Illinois, Iowa.

Deltodus littoni Newb. and Worth.

Newberry and Worthen 1870 A, p. 367, pl. iv, figs. 8, 8*a*.
Keyes, C. R. 1894 A, p. 235.
St. John and Worthen 1883 A, p. 149.
Woodward, A. S. 1889 D, p. 200.
Subcarboniferous; Missouri.

Deltodus mercurii Newb.

Newberry, J. S. 1876 A, p. 137, pl. iii, figs. 1, 1*a*.
St. John and Worthen 1883 A, pl. x, figs. 2-2*d*.
Woodward, A. S. 1889 D, p. 200.
Coal-measures; New Mexico.

Deltodus obliquus (St. J. and Worth.).

St. John and Worthen 1883 A, p. 78, pl. xiii, fig. 10. (Tæniodus.)
Lesley, J. P. 1890 A, p. 1173, figures. (Teniodus.)
1895 A, pl. ccxxxiv. (Teniodus.)
Woodward A. S. 1889 D, p. 201.
Subcarboniferous (Warsaw); Indiana.

Deltodus occidentalis (Leidy).

Leidy, J. 1857 N, p. 88, pl. v, figs. 3-16. (Cochliodus.)
Newberry and Worthen 1866 A, p. 97, pl. ix, figs. 2-3*a*. (D. stellatus.)
St. John and Worthen 1883 A, p. 150, pl. ix, figs. 9, 10. (D. occidentalis?)
Woodward, A. S. 1889 D, p. 199.
Subcarboniferous; Illinois.

Deltodus parvus St. J. and Worth.

St. John and Worthen 1883 A, p. 151, pl. ix, figs. 1-5.
Keyes, C. R. 1894 A, p. 235.
Woodward A. S. 1889 D, p. 201.
Subcarboniferous (St. Louis); Illinois, Iowa, Missouri.

Deltodus planidens Cope.

Cope, E. D. 1894 F, p. 435, pl. xx, fig. 6.
Carboniferous?; Texas.

Deltodus powellii St. J. and Worth.

St. John and Worthen 1883 A, p. 155, pl. x, fig. 1-1*f*
Woodward, A. S. 1889 D, p. 201.
Carboniferous; Utah.

Deltodus propinquus St. J. and Worth.

St. John and Worthen 1883 A, p. 156, pl. x, figs. 3, 4.
Woodward A. S. 1889 D, p. 201.
1900 C, p. 420.
Coal-measures; Illinois.

Deltodus spatulatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 100, pl. ix, fig. 7.
Kindle, E. M. 1898 A, p. 484.
Newberry, J. S. 1879 A, p. 346.
1897 A, p. 299, pl. xxiv, figs. 8-11.
St. John and Worthen 1883 A, p. 166.
Woodward, A. S. 1889 D, p. 199.
Subcarboniferous; Illinois, Indiana.

Deltodus trilobus St. J. and Worth.

St. John and Worthen 1883 A, p. 148, pl. ix, fig. 8.
Woodward, A. S. 1889 D, p. 201.
Subcarboniferous (Warsaw); Illinois.

Deltodus undulatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 98, pl. ix, fig. 5.
Woodward, A. S. 1889 D, p. 201.
Subcarboniferous (Keokuk); Iowa.

CHITINODUS St. J. and Worth. Type *C. springeri* St. J. and Worth.

St. John and Worthen 1883 A, pp. 60, 109.
Miller, S. A. 1889 A, p. 590.
Woodward, A. S. 1889 D, p. 217.
Zittel, K. A. 1890 A, p. 70.

Chitinodus antiquus St. J. and Worth.

St. John and Worthen 1883 A, p. 116, pl. vi, fig. 2.
Woodward, A. S. 1889 D, p. 217.
Subcarboniferous (Burlington); Iowa.

Chitinodus latus (Leidy).

Leidy, J. 1857 H, p. 88, pl. v, fig. 17. (Cochliodus.)
Dana, J. D. 1896 A, p. 644, fig. 1018. (Cochliodus nobilis.)
Newberry, J. S. 1897 A, p. 301, pl. xxiv, fig. 24. (Helodus coxanus.)
Newberry and Worthen 1866 A, p. 88, pl. vi, figs. 3-6 [Helodus (Cochliodus) nobilis]; p. 89, pl. vii, figs. 1-4; pl. viii, fig. 1 (Cochliodus nobilis).
1870 A, p. 365 (Cochliodus nobilis).
St. John and Worthen 1883 A, pp. 112, 124.
Woodward, A. S. 1889 D, p. 208. (Cochliodus.)
Zittel, K. A. 1890 A, p. 70. (Chitinodus nobilis.)
Subcarboniferous (Keokuk); Illinois, Iowa.

Chitinodus liratus St. J. and Worth.

St. John and Worthen 1883 A, p. 119, pl. vi, fig. 1.
Woodward, A. S. 1889 D, p. 217.
Subcarboniferous (St. Louis); Illinois.

Chitinodus rugosus Newb. and Worth.

Newberry and Worthen 1866 A, p. 94, pl. viii, fig. 13. (Pœcilodus.)
1866 A, p. 95, pl. viii, fig. 14. (Pœcilodus ornatus.)
St. John and Worthen 1883 A, p. 112. (P. rugosus and P. ornatus to C. rugosus.)
Woodward, A. S. 1889 D, p. 201 (P. ornatus to Deltodus ornatus); p. 205 (P. rugosus); p. 217.
Subcarboniferous (Keokuk); Illinois.

Chitinodus springeri St. J. and Worth.

St. John and Worthen 1883 A, p. 112, pl. vi, figs. 3-15.
Woodward, A. S. 1889 D, p. 217.
Subcarboniferous (Burlington); Illinois, Iowa.

Chitinodus tribulis St. J. and Worth.

St. John and Worthen 1883 A, p. 117, pl. vii, figs. 18-21.
Woodward, A. S. 1889 D, p. 217.
Subcarboniferous (Keokuk); Illinois, Iowa.

PŒCILODUS McCoy. Type *P. jonesii* McCoy.

McCoy, F. 1848 A, p. 129.
Barkas, T. P. 1873 A, p. 19.
Davis, J. W. 1883 A, pp. 413, 441.
McCoy, F. 1855 A, p. 638.
Miller, S. A. 1889 A, p. 607.
Pictet, F. J. 1854 A, p. 270.
Traquair, R. H. 1888 A, p. 84.
Trautschold, H. 1874 B, p. 290.
Woodward, A. S. 1889 D, p. 201.
1892 G, p. 674.
Zittel, K. A. 1890 A, p. 70.

Pœcilodus carbonarius St. J. and Worth.

St. John and Worthen 1883 A, p. 139, pl. viii, figs. 20-21.
Lesley, J. P. 1889 A, p. 727, figures.
Woodward, A. S. 1889 D, p. 204.
Upper Coal-measures; Illinois, Kansas.

Pœcilodus cestriensis St. J. and Worth.

St. John and Worthen 1883 A, p. 135, pl. viii, figs. 15-17.
Lesley, J. P. 1889 A, p. 727, figures.
Woodward, A. S. 1889 D, p. 205.
Subcarboniferous (Chester); Illinois.

Pœcilodus convolutus Newb. and Worth.

Newberry and Worthen 1870 A, p. 366, pl. ii, fig. 9.
Woodward, A. S. 1889 D, p. 205.
Subcarboniferous (Keokuk); Illinois.

Pœcilodus sancti-ludovici St. J. and Worth.

St. John and Worthen 1883 A, p. 132, pl. viii, figs. 8-12.
Keyes, C. R. 1894 A, p. 235.
Lesley, J. P. 1889 A, p. 728, figures.
Woodward, A. S. 1889 D, p. 205.
Subcarboniferous (St. Louis); Illinois, Missouri, Iowa.

Pœcilodus springeri St. J. and Worth.

St. John and Worthen 1883 A, p. 138, pl. viii, fig. 19.
Lesley, J. P. 1889 A, p. 728, figures.

Woodward, A. S. 1889 D, p. 205, 215. (Deltoptychius.)
Subcarboniferous; New Mexico.

Pœcilodus varsoviensis St. J. and Worth.

St. John and Worthen 1883 A, p. 131, pl. viii, figs. 13, 14.
Lesley, J. P. 1889 A, p. 728, figures.
Woodward, A. S. 1889 D, p. 205.
Subcarboniferous (Warsaw); Illinois.

Pœcilodus wortheni St. John.

St. John, in St. John and Worthen 1883 A, p. 136, pl. viii, fig. 18.
Lesley, J. P. 1889 A, p. 728, figures.
Woodward, A. S. 1889 D, pp. 205, 215. (Deltoptychius.)
Subcarboniferous (Chester); Illinois.

COCHLIODUS Agassiz. Type *C. contortus* Agassiz.

Agassiz, L. 1843 B (1838), iii, p. 113.
1844 A.
Amer. Geologist 1888 A, p. 133.
Davis, J. W. 1882 B, p. 54.
1883 A, p. 420.
Jaekel, O. 1891 B, p. 128.
Koninck, L. G. de 1878 A, p. 56.
McCoy, F. 1853 B.
1855 A, p. 621.
Miller, S. A. 1889 A, p. 591.
Newberry, J. S. 1889 A, p. 186.
Newberry and Worthen 1866 A, pp. 74, 89.
Nicholson and Lydekker 1889 A, p. 940.
Owen, R. 1845 B, p. 62, pl. xxii, fig. 1.
1860 E, p. 109.
1867 A.
Pictet, F. J. 1854 A, p. 267.
St. John and Worthen 1883 A, p. 58.
Steinmann and Döderlein 1890 A, p. 550.
Traquair, R. H. 1888 A, p. 84.
Trautschold H. 1874 B, p. 291.
Woodward, A. S. 1884 A, p. 269.
1889 D, p. 205.
1892 G, fig. 3.
Zittel, K. A. 1890 A, pp. 69, 71.

Cochliodus costatus Newb. and Worth.

Newberry and Worthen 1870 A, p. 364, pl. iii, figs. 10–12, 12*a*.
St. John and Worthen 1883 A, pp. 167, 171.
Woodward, A. S. 1889 D, p. 208.
Subcarboniferous (Burlington); Iowa.

Cochliodus leidyi St. J. and Worth.

St. John and Worthen 1883 A, p. 127, pl. vii, figs. 11–16.
Woodward, A. S. 1889 D, p. 208.
Subcarboniferous (Chester); Illinois.

Cochliodus obliquus St. J. and Worth.

St. John and Worthen 1883 A, p. 126, pl. vii, fig. 17.
Keyes, C. R. 1894 A, p. 233.
Woodward, A. S. 1889 D, p. 212.
Subcarboniferous (St. Louis); Missouri.

Cochliodus vanhornii St. J. and Worth.

St. John and Worthen 1883 A, p. 121, pl. vii, figs. 1–10.
Keyes, C. R. 1894 A, p. 233.
Woodward, A. S. 1889 D, p. 208.
Subcarboniferous (St. Louis); Illinois, Iowa, Missouri.

DELTOPTYCHIUS Davis. Type *Cochliodus acutus* McCoy.

Davis, J. W. 1883 A, p. 432.
Miller, S. A. 1889 A, p. 595.
St. John and Worthen 1883 A, pp. 59, 89.
Woodward, A. S. 1889 D, p. 212.
1892 G, p. 674.
Woodward and Sherborn 1890 A, p. 61.
Zittel, K. A. 1890 A, p. 70.

Deltoptychius expansus St. J. and Worth.

St. John and Worthen 1883 A, p. 98, pl. v, figs. 9, 13.
Keyes, C. R. 1894 A, p. 233.
Woodward, A. S. 1889 D, pp. 212, 215.
Subcarboniferous (St. Louis); Illinois, Missouri, Iowa.

Deltoptychius nitidus (Leidy).

Leidy, J. 1857 A, p. 87, pl. v. fig. 2 (Cochliodus).
St. John and Worthen 1883 D, p. 99, pl. v, fig. 16.
Woodward, A. S. 1889 D, p. 215.
Subcarboniferous (Chester); Illinois.

Deltoptychius primus St. J. and Worth.

St. John and Worthen 1883 A, p. 93, pl. v, figs. 6–8.
Woodward A. S. 1889 D, pp. 212, 215.
Subcarboniferous (Burlington); Iowa.

Deltoptychius varsoviensis St. J. and Worth.

St. John and Worthen 1883 A, p. 96, pl. v, figs. 14, 15.
Woodward, A. S. 1889 D, pp. 212, 215.
Subcarboniferous (Warsaw); Illinois.

Deltoptychius wachsmuthi St. J. and Worth.

St. John and Worthen 1883 A, p. 93, pl. v, figs. 1–5.
Keyes, C. R. 1894 A, p. 233.
Lesley, J. P. 1889 A, p. 193, figure.
1895 A, pl. ccxxix.
Miller, S. A. 1889 A, p. 595, fig. 1124.
Woodward, A. S. 1889 D, pp. 209, 212, 215.
Subcarboniferous (Keokuk); Illinois, Iowa, Missouri.

ORODONTIDÆ.

Davis, J. W 1882 B.
1883 A, pp. 331, 386.
Koninck, L. G. de 1878 A, p. 29.
Traquair, R. H. 1888 A, p. 84.
Ward, J. 1890 A, p. 34.
Woodward, A. S. 1884 A, p. 269.
Zittel, K. A. 1890 A, p. 74. (Cestracionidæ, in part.)

OʀᴏᴅᴜS Agassiz. Type *O. cinctus* Agassiz.

Agassiz, L. 1843 B (1833), iii, p. 96.
1844 A.
Davis, J. W. 1882 B, p. 49.
1883 A, p. 390.
Eastman, C. R. 1900 C, p. 392.
Hasse, C. 1878 A, p. 145.
Jaekel, O. 1890 A, p. 93.
1899 A.
Koninck, L. G. de. 1844 A, p. 612.
1878 A, p. 29.
Miller, S. A. 1889 A, p. 603.
Newberry and Worthen 1866 A, p. 62.
Nicholson and Lydekker 1889 A, p. 940.
Owen, R. 1860 E, p. 108.
Pictet, F. J. 1854 A, p. 263.
Quenstedt, F. A. 1885 A, p. 294.
Trautschold, H. 1874 B, p. 292.
Woodward, A. S. 1884 A, p. 269.
1889 D, p. 230.
Woodward and Sherborn 1890 A, pp. 49, 132.
Zittel, K. A. 1890 A, p. 75.

Orodus alleni St. J. and Worth.

St. John and Worthen 1875 A, pp. 310, 318, pl. vii, fig. 19.
Woodward, A. S. 1889 D, p. 236.
Lower Coal-measures; Iowa.

Orodus carinatus St. J. and Worth.

St. John and Worthen 1875 A, p. 307, pl. v, figs. 24a–24d.
Woodward, A. S. 1889 D, p. 236.
Subcarboniferous (Keokuk); Iowa.

Orodus colletti Newb.

Newberry, J. S. 1879 A, p. 343.
Kindle, E. M. 1898 A, p. 484.
Woodward, A. S. 1889 D, p. 236.
Subcarboniferous (St. Louis); Indiana.

Orodus dædaleus St. J. and Worth.

St. John and Worthen 1875 A, p. 301, pl. vi, figs. 7, 8.
Woodward, A. S. 1889 D, p. 237.
Subcarboniferous (Kinderhook); Iowa.

Orodus decussatus St. J. and Worth.

St. John and Worthen 1875 A, p. 300, pl. vi, figs. 10–15.
Woodward, A. S. 1889 D, p. 237.
Subcarboniferous (Kinderhook); Iowa.

Orodus elegantulus Newb. and Worth.

Newberry and Worthen 1866 A, p. 64, pl. iv, figs. 6, 6a.
Kindle, E. M. 1898 A, p. 484.
Lesley, J. P. 1889 A, p. 505, figure.
Newberry, J. S. 1875 A, p. 51, pl. lviii, figs. 12, 12a.
1879 A, p. 346.
Woodward, A. S. 1889 D, p. 235.
Subcarboniferous; Iowa, Indiana, Ohio.

Orodus fastigiatus St. J. and Worth.

St. John and Worthen 1875 A, p. 306, pl. vi, figs. 1–3.
Woodward, A. S. 1889 D, p. 237.
Subcarboniferous (Burlington); Iowa.

Orodus gibbosus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 79, pl. v, figs. 3–3a. (Helodus.)
Miller, S. A. 1899 A, p. 599, fig. 1137. (Helodus.)
St. John and Worthen 1875 A, p. 305. (Orodus.)
Woodward A. S. 1889 D, p. 238. (O. variocostatus?)
Subcarboniferous (Keokuk); Illinois, Iowa.

Orodus major St. J. and Worth.

St. John and Worthen 1875 A, p. 302, pl. vii, fig. 10.
Koninck, L. G. de 1878 A, p. 30. (Syn. of O. ramosus.)
Woodward, A. S. 1889 D, p. 237.
Subcarboniferous (Burlington); Iowa.

Orodus mammillaris Newb. and Worth.

Newberry and Worthen 1866 A, p. 66, pl. iv, figs. 10, 10a.
Dana, J. D. 1896 A, p. 644, fig. 1022.
Woodward, A. S. 1889 D, p. 235.
Subcarboniferous (Keokuk); Illinois.

Orodus minutus Newb. and Worth.

Newberry and Worthen 1866 A, p. 68, pl. iv, fig. 12.
Woodward, A. S. 1889 D, p. 237.
Subcarboniferous (Keokuk); Illinois.

Orodus neglectus St. J. and Worth.

St. John and Worthen 1875 A, p. 308, pl. vi, fig. 26.
Woodward, A. S. 1889 D, p. 237.
Subcarboniferous (St. Louis); Illinois, Iowa.

Orodus ornatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 65, pl. iv, figs. 7–8a.
Kindle, E. M. 1898 A, p. 484.
Newberry, J. S. 1879 A, p. 346.
Woodward, A. S. 1889 D, p. 233.
Subcarboniferous (Keokuk); Illinois, Indiana.

Orodus ? parallelus St. J. and Worth.

St. John and Worthen 1875 A, p. 295, pl. v, fig. 23.
Woodward, A. S. 1889 D, p. 237.
Subcarboniferous (Kinderhook); Iowa.

Orodus parvulus St. J. and Worth.

St. John and Worthen 1875 A, p. 309, pl. vi, fig. 6.
Woodward, A. S. 1889 D, p. 237.
Subcarboniferous (St. Louis); Illinois.

Orodus plicatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 63, pl. iv, fig. 5.
Hambach, G. 1890 A, p. 81.
Woodward, A. S. 1889 D, p. 237.
Subcarboniferous (St. Louis); Missouri.

Orodus ramosus Agassiz.

Agassiz, L. 1843 B (1838), iii, p. 97, pl. xi, figs. 5–8.
Davis, J. W. 1883 A, p. 390, pl. l, figs. 1–7 (O. ramosus); p. 399, pl. li, fig. 15 (O. subteres).
Kindle, E. M. 1898 A, p. 484. (O. multicarinatus.)
Koninck, L. G. de 1844 A, p. 613, pl. lv, fig. 2.
1878 A, p. 30, pl. iv, fig. 1.
Newberry, J. S. 1889 A, pp. 185, 205, pl. xxvii, fig. 29.
Newberry and Worthen 1866 A, p. 62, pl. iv, figs. 13–13*a*. (O. multicarinatus.)
Romanovsky, G. 1864 A, p. 157, fig. 2.
Woodward, A. S. 1889 D, p. 231 (O. ramosus); p. 237 (O. ? multicarinatus).
Subcarboniferous; Europe, Indiana, Michigan.

Orodus tuberculatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 66, pl. iv, figs. 9, 9*a*.
Woodward, A. S. 1888 D, p. 234.
Subcarboniferous (Burlington); Illinois, Iowa.

Orodus turgidus St. J. and Worth.

St. John and Worthen 1875 A, p. 310, pl. vi, figs. 4, 5.
Woodward, A. S. 1889 D, p. 238.
Subcarboniferous (Chester); Illinois.

Orodus variabilis Newb.

Newberry, J. S. 1875 A, p. 50, pl. lviii, figs. 11–11*h*.
Lesley, J. P. 1889 A, p. 506, figure.
Newberry, J. S. 1873 A, p. 279. (No description; syn. ? of Ctenacanthus furcicarinatus.)
Woodward, A. S. 1889 D, p. 238.
Subcarboniferous (Waverly); Ohio, Kentucky.

Orodus variocostatus St. J. and Worth.

St. John and Worthen 1875 A, p. 304, pl. viii, figs. 1–9.
Hambach, G. 1890 A, p. 81.
Woodward, A. S. 1889 D, p. 238.
Subcarboniferous (Burlington); Illinois, Iowa, Missouri (*fide* Hambach).

Orodus whitei St. J. and Worth.

St. John and Worthen 1875 A, p. 297, pl. vi, fig. 25.
Woodward, A. S. 1889 D, p. 238.
Subcarboniferous (Kinderhook); Iowa.

LEIODUS St. J. and Worth. Type *L. calcaratus*, St. J. and Worth.

St. John and Worthen 1875 A, p. 335.
Miller, S. A. 1889 A, p. 600. (Liodus.)
Woodward, A. S. 1889 D, p. 240.

Leiodus calcaratus St. J. and Worth.

St. John and Worthen 1875 A, p. 336, pl. vii, figs. 11–18.
Miller, S. A. 1889 A, p. 600, fig. 1141. (Liodus.)
Woodward, A. S. 1889 D. p. 240.
Subcarboniferous (Burlington); Illinois, Iowa.

Leiodus grossipunctatus St. J. and Worth.

St. John and Worthen 1875 A, p. 337.
Woodward, A. S. 1889 D, p. 240.
Subcarboniferous (Keokuk); Illinois, Iowa.

CAMPODUS Koninck. Type *C. agassizianus* Koninck.

Koninck, L. G. de 1844 A, p. 617.
Amer. Geologist 1888 A, p. 133. (Lophodus.)
Davis, J. W. 1882 B, p. 50. (Agassizodus.)
Jaekel, O. 1894 A, p. 137.
Lohest, M. 1884 A, pp. 296, 305.
Miller, S. A. 1889 A, p. 587. (Agassizodus.)
Mudge, B. F. 1875 A. (Agassizodus.)
Newberry and Worthen 1870 A, p. 360. Lophodus, type *L. variabilis;* not Lophodus of Romanovsky.)
Pictet, F. J. 1854 A, p. 267.
St. John and Worthen 1875 A, pp. 297, 311, 316. (Agassizodus, to replace Lophodus.)
Woodward, A. S. 1889 D, p. 238.
Zittel, K. A. 1890 A, p. 75.

Campodus basalis (Cope).

Cope, E. D. 1894 F, p. 432, pl. xviii, figs. 6, 7. (Orodus, with Agassizodus as a section.)
Coal-measures; Illinois.

Campodus corrugatus (Newb. and Worth.).

Newberry and Worthen 1870 A, p. 358, pl. iii, figs. 18, 18*a*. (Orodus.)
St. John and Worthen 1875 A, pp. 316, 323, pl. viii, fig. 24. (Agassizodus.)
Woodward, A. S. 1889 D, p. 239. (Campodus.)
Coal-measures; Illinois, Kansas.

Campodus scitulus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 322, pl. vi, figs. 16–18*c*. (Agassizodus.)
Cope, E. D. 1894 F, p. 433. (Orodus, section Agassizodus.)
Woodward, A. S. 1889 D, p. 239. (Campodus.)
Coal-measures; Illinois, Iowa.

Campodus variabilis (Newb. and Worth.).

Newberry and Worthen 1870 A, p. 361, pl. iv, figs. 4–4*b*; 5, 5*a*; 11–11*b*. (Lophodus.)
Lohest, M. 1884 A, p. 305. (Campodus.)
Miller, S. A. 1889 A, p. 587, fig. 1101. (Agassizodus.)
St. John and Worthen 1875 A, p. 318, pl. viii, figs. 1–22. (Agassizodus.)
Woodward, A. S. 1889 D, p. 239. (Campodus.)
Subcarboniferous; Belgium: Coal-measures; West Virginia, Iowa, Kansas.

Campodus virginianus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 321, pl. viii, figs. 23*a*–23*d*. (Agassizodus.)

Cope, E. D. 1894 F, p. 433. (Orodus, section Agassizodus.)

Lohest, M. 1884 A, p. 306. (Campodus agassizianus.)

Woodward, A. S. 1889 D, p. 238. (C. agassizianus.)

Coal-measures; West Virginia.

MESODMODUS St. J. and Worth. Type *M. exsculptus* St. J. and Worth.

St. John and Worthen 1875 A, p. 290.

Miller, S. A. 1889 A, p. 602.

Woodward, A. S. 1889 D, p. 239.

Mesodmodus explanatus St. J. and Worth.

St. John and Worthen 1875 A, p. 293, pl. v, figs. 15–17.

Woodward, A. S. 1889 D, p. 239.

Subcarboniferous (Kinderhook); Iowa.

Mesodmodus exsculptus St. J. and Worth.

St. John and Worthen 1875 A, p. 291, pl. v, figs. 18–22.

Miller, S. A. 1889 A, p. 602, fig. 1148.

Woodward, A. S. 1889 D, p. 240.

Subcarboniferous (Kinderhook); Iowa.

Mesodmodus ornatus St. J. and Worth.

St. John and Worthen 1875 A, p. 294, pl. v, figs. 12–14.

Woodward, A. S. 1889 D, p. 240.

Subcarboniferous (Burlington); Illinois, Iowa.

DESMIODUS St. J. and Worth. Type *D. tumidus* St. J. and Worth.

St. John and Worthen 1875 A, p. 337.

Miller, S. A. 1889 A, p. 595.

Newberry, J. S. 1889 A, p. 186.

Woodward, A. S. 1889 D, p. 240.

Desmiodus costelliferus St. J. and Worth.

St. John and Worthen 1875 A, p. 341, pl. xA, figs. 10, 11.

Keyes, C. R. 1894 A, p. 230.

Miller, S. A. 1889 A, p. 595, fig. 1125.

Woodward, A. S. 1889 D, p. 240.

Subcarboniferous (St. Louis); Illinois, Missouri.

Desmiodus? flabellum St. J. and Worth.

St. John and Worthen 1875 A, p. 343, pl. xA, fig. 15.

Keyes, C. R. 1894 A, p. 230.

Woodward, A. S. 1889 D, p. 240.

Subcarboniferous (Keokuk); Missouri.

Desmiodus? ligoniformis St. J. and Worth.

St. John and Worthen 1875 A, p. 342, pl. xA, figs. 12–14.

Keyes, C. R. 1894 A, p. 230.

Woodward, A. S. 1889 D, p. 240.

Subcarboniferous (Keokuk); Missouri, Iowa.

Desmiodus minusculus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 67, pl. iv, fig. 11. (Orodus.)

St. John and Worthen 1875 A, p. 339, 340. (Desmiodus.)

Woodward, A. S. 1889 D, p. 237. (Orodus.)

Subcarboniferous (Keokuk); Illinois.

Desmiodus tumidus St. J. and Worth.

St. John and Worthen 1875 A, pp. 299, 339, pl. xA, figs. 7–9.

Keyes, C. R. 1894 A, p. 230.

Woodward, A. S. 1889 D, p. 240.

Subcarboniferous (St. Louis); Illinois, Missouri.

PETRODUS McCoy, F. Type *P. patelliformis* McCoy.

McCoy, F. 1848 A, p. 132.

Davis, J. W. 1883 A, p. 400.

Jaekel, O. 1899 A, p. 278. (Syn.? of Polyrhizodus.)

Koninck, L. G. de 1878 A, p. 36.

Lohest, M. 1884 A.

McCoy, F. 1855 A, p. 637.

Miller, S. A. 1889 A, p. 606.

Newberry and Worthen 1866 A, p. 71.
1870 A, p. 346.

Pictet, F. J. 1854 A, p. 263.

Trautschold, H. 1874 B, p. 298. (Ostinaspis.)

Woodward, A. S. 1889 D, p. 245.

Zittel, K. A. 1890 A, p. 76.

It is probable that the bodies included in this genus are not teeth but dermal tubercles.

Petrodus acutus Newb. and Worth.

Newberry and Worthen 1866 A, p. 72, pl. iv, fig. 17.

Trautschold, H. 1874 B, p. 209, pl. xxviii, fig. 12. (Ostinaspis.)

Woodward, A. S. 1889 D, p. 247.

Coal-measures; Illinois.

Petrodus occidentalis Newb. and Worth.

Newberry and Worthen 1866 A, p. 70, pl. iv, figs. 15–16*a*.
Jaekel, O. 1899 A, p. 283.
Keyes, C. R. 1888 A, p. 243.
Kindle, E. M. 1898 A, p. 485.
Lesley, J. P. 1889 A, p. 628, figures.
Newberry and Worthen 1870 A, p. 346.
Woodward, A. S. 1889 D, p. 246.
Coal-measures; Illinois, Indiana.

Petrodus ? pustulosus Newb. and Worth.

Newberry and Worthen 1870 A, p. 369, pl. ii, figs. 5, 5*a*; pl. iii, fig. 6.
Newberry, J. S. 1889 A, p. 178.
Woodward, A. S. 1889 D, p. 247.
Subcarboniferous (Burlington); Iowa.

STEMMATIAS Hay. Type *Stemmatodus cheiriformis* St. J. and Worth.

Hay, O. P. 1899 E, p. 784.
Davis, J. W. 1892 A, pp. 721, 726. (Syn. of Pleuracanthus.)
Jaekel, O. 1899 A, p. 278. (Stemmatodus, syn. of Polyrhizodus.)
Lesley, J. P. 1890 A, p. 1048.
St. John and Worthen 1875 A, p. 328. (Stemmatodus; preoccupied by Heckel.)
Ward, J. 1890 A, p. 153. (Stemmatodus.)
Wellburn, E. D. 1899, Proc. Yorksh. Geol. Polytech. Soc., xiii, p. 425. (Stemmatodus.)
Woodward, A. S. 1889 D, pp. 245, 247. (Stemmatodus.)

Stemmatias bicristatus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 331, pl. viii, figs. 32, 33, 35. (Stemmatodus.)
Hay, O. P. 1899 E, p. 784.
Lesley, J. P. 1890 A, p. 1048, figures. (Stemmatodus.)
Woodward, A. S. 1889 D, p. 247. (Stemmatodus.)
Subcarboniferous (Burlington); Iowa.

Stemmatias bifurcatus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 330, pl. viii, figs. 31*a*–31*c*. (Stemmatodus.)
Hay, O. P. 1899 E, p. 784.
Lesley, J. P. 1890 A, p. 1048, figures. (Stemmatodus.)
Woodward, A. S. 1889 D, p. 247. (Stemmatodus.)
Subcarboniferous (Burlington); Iowa.

Stemmatias cheiriformis (St. J. and Worth.).

St. John and Worthen 1875 A, p. 330, pl. viii, figs. 29, 30. (Stemmatodus.)
Hay, O. P. 1899 E, p. 784.
Lesley, J. P. 1890 A, p. 1048, figures. (Stemmatodus.)
Woodward, A. S. 1889 D, p. 247. (Stemmatodus.)
Subcarboniferous (Burlington); Iowa.

Stemmatias compactus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 334, pl. viii, figs. 38*a*–38*c*. (Stemmatodus.)
Hay O. P. 1899 E, p. 784.
Lesley, J. P. 1890 A, p. 1049, figure. (Stemmatodus.)
Woodward, A. S. 1889 D, p. 247. (Stemmatodus.)
Subcarboniferous (Chester); Illinois.

Stemmatias keokuk (St. J. and Worth.).

St. John and Worthen 1875 A, p. 334. (Stemmatodus.)
Hay, O. P. 1899 E, p. 784.
Woodward, A. S. 1889 D, p. 247. (Stemmatodus).
Subcarboniferous (Keokuk); Iowa, Illinois.

Stemmatias simplex (St. J. and Worth.).

St. John and Worthen 1875 A, p. 332, pl. viii, figs. 34, 36, 37. (Stemmatodus.)
Hay, O. P. 1899 E, p. 784.
Lesley, J. P. 1890 A, p. 1049, figures. (Stemmatodus.)
Woodward, A. S. 1889, D, p. 247. (Stemmatodus.)
Subcarboniferous (Burlington); Iowa.

Stemmatias symmetricus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 333, pl. viii, fig. 28. (Stemmatodus.)
Hay, O. P. 1899 E, p. 784.
Lesley, J. P. 1890 A, p. 1049, figures. (Stemmatodus.)
Woodward, A. S. 1889 D, p. 247. (Stemmatodus.)
Subcarboniferous (Burlington); Iowa.

HETERODONTIDÆ.

Gill, T. 1862 A. (Heterodontoidæ.)
Agassiz, L. 1843 B (1838), iii, pp. 83, 159. ("Cestraciontes.")
Brown, C. 1900 A, p. 173. (Cestraciontidæ, Hybodontidæ.)
Davis, J. W. 1882 B. (Hybodontidæ.)
1883 A, pp. 331, 332. (Hybodontidæ.)
Fraas, E. 1896 A, pp. 17, 18. (Hybodontidæ, Acrodontidæ, Cestraciontidæ.)
Fritsch A. 1889 B, p. 97. (Hybodontidæ.)
Garman, S. 1885 B, p. 31. (Hybodontidæ.)
Gegenbaur, C. 1872 A. (Cestraciodontidæ.)
Gill, T. 1872 C, p. 23. (Heterodontidæ.)
1884 B, p. 346. (Hybodontidæ, Heterodontidæ.)
Günther, A. 1880 A, p. 328. (Hybodontidæ, Cestraciontidæ.)
1881 A, p. 685. (Hybodontidæ, Cestraciontidæ.)
Hasse, C. 1878 A. (Hybodontidæ, Cestraciontidæ.)
1879 A, p. 50 ("Acrodontiden"); p. 68 (Hybodontidæ).
1882 A, p. 183. (Cestraciontidæ.)
Haswell, W. A. 1884 A. (Cestraciontidæ.)

Howes, G. B. 1887 A. (Cestracion.)
Huxley, T. H. 1876 A. (Cestraciontidæ.)
Jaekel, O. 1890 D, p. 121, fig. 2. (Cestracion.)
    1894 A, p. 137. (Heterodontus.)
Koninck, L. G. de 1878 A, p. 29. (Cestraciontidæ.)
Marsh, O. C. 1877 E. (Cestraciontidæ.)
Mayer, P. 1882 A, p. 277. (Cestraciontidæ.)
Mivart, St. G. 1879 A, p. 449, pl. lxxvi. (Cestracion.)
Müller and Henle 1841 A, p. 76. (Cestraciontes.)
Nicholson and Lydekker 1889 A, p. 940. (Hybodontidæ, Cestraciontidæ.)
Owen, R. 1860 E, p. 106. (Cestraciontidæ.)
Pictet, F. J. 1854 A, p. 254 ("Hybodontes"); p. 260 ("Cestraciontes").
Quenstedt, F. A. 1885 A, p. 272 ("Hybodonten"); p. 278 ("Cestracionten").
Reis, O. M. 1897 A, p. 69. ("Hybodonten").
Stannius, H. 1854 A. (Cestraciones.)
Steinmann and Döderlein 1890 A, pp. 545, 546. (Hybodontidæ, Cestraciontidæ.)
Tomes, C. S. 1898 A, p. 244 ("Cestracionts").
Woodward, A. S. 1884 A, p. 267. (Hybodontidæ.)
    1885 B, p. 106. (Cestraciontidæ.)
    1889 D, p. 229. (Cestraciontidæ.)
    1898 B, pp. 42, 44. (Cestraciontidæ.)
Zittel, K. A. 1890 A, p. 66 (Hybodontidæ); p. 74 (Cestraciontidæ).

HYBODUS Agassiz. Type *H. plicatilis* Agassiz.

Agassiz, L. 1843 B (1837), pp. 41, 178.
    1843 B, p. 201. (Sphenonchus, in part.)
    1844 A.
Barkas, W. J. 1874 A, p. 386.
    1877 B, p. 145.
Brown, C. 1900 A, p. 149, pls. xv, xvi.
Day, E. C. H. 1864 A.
Egerton, P. G. 1845 A, pl. iv.
Fraas, E. 1896 A.
Garman, S. 1885 B, p. 31.
Giebel, C. G. 1848 A, p. 311.
Jaekel, O. 1884 A, p. 294.
    1898 B, p. 135 (Hybodus); p. 138 (Orthybodus); p. 143 (Parahybodus).
Mackie, S. J. 1863 A.
Nicholson and Lydekker 1889 A, p. 940.
Owen, R. 1845 B, p. 56, pl. xi.
    1860 E, p. 105.
Pictet, F. J. 1854 A, p. 256.
Quenstedt, F. A. 1852 A, p. 174.
    1885 A, p. 273.
Steinmann and Döderlein 1890 A, p. 546.
Williamson, W. C. 1849 A, p. 465, pl. 43, fig. 33.
Woodward, A. S. 1884 A, p. 268.
    1886 A.
    1888 I, p. 251.
Woodward, A. S. 1888 J, p. 58.
    1889 D, p. 250.
    1889 E.
    1889 F.
    1898 B, p. 44.
Woodward and Sherborn 1890 A, p. 99.
Zittel, K. A. 1890 A, p. 67.

Hybodus clarkensis Cragin.

Cragin, F. W. 1894 A, p. 72, pl. ii, figs. 11-14.
    Cretaceous (Neocomian); Kansas.

Hybodus copei Hay.

Hay, O. P. 1899 E, p. 784.
Cope, E. D. 1891 B, p. 448, pl. xxviii, fig. 2. (H regularis; preoccupied by Reuss, 1846.)
    Triassic?: Texas.

Hybodus polyprion Agassiz.

Agassiz, L. 1843 B, iii, p. 185, pl. xxiii, figs. 1-15.
Marsh, O. C. 1889 A, p. 230.
Woodward, A. S. 1886 C, p. 257, pl. vi, figs. 1, 2.
    1889 D, p. 268.
    Stonesfield Slate, England: Jurassic; Black Hills, Wyoming.

ACRODUS Agassiz. Type *A. gaillardoti* Agassiz.

Agassiz, L., 1837, in H. B. Geinitz, Beiträge Kennt. Thüring. Muschelkgeb., p. 21. (*Fide* A. S. Woodward.)
    1843 B (1838), iii, p. 139 (Acrodus); p. 201 (Sphenonchus, in part).
    844 A.
Day, E. C. H. 1864 A.
Giebel, C. G. 1848 A, p. 325.
Hasse, C. 1882 A, p. 191, pls. xxiv, xxv.
Jaekel, O. 1884 A, p. 311.
    1890 A, p. 93.
    1891 D, p. 191
    1894 A, p. 132.
    1899 A, p. 296.
Nicholson and Lydekker 1889 A, p. 942.
Owen, R. 1845 B, p. 54, pls. xiv-xvi.
    1860 E, p. 109.
Pictet, F. J. 1854 A, p. 261.
Quenstedt, F. A. 1852 A, p. 178.
    1885 A, p. 278.
Steinmann and Döderlein 1890 A, p. 546.
Traquair, R. H. 1888 A, p. 84.
Woodward, A. S. 1885 B, p. 107.
    1889 D, p. 279.
    1889 E.
    1889 F.
Woodward and Sherborn, 1890 A, p. 5.
Zittel, K. A. 1890 A, p. 76.

Acrodus emmonsi Leidy.

Leidy, J. 1872 M, p. 163.
Emmons, E. 1858 B, p. 244, fig. 97. ("Acrodus.")
Leidy, J. 1873 B, pp. 301, 352.
Woodward, A. S. 1889 D, p. 296.
    Miocene?; North Carolina?.

Acrodus humilis Leidy.

Leidy, J. 1872 M, p. 163.
    1873 B, pp. 300, 352, pl. xxxvii, fig. 5.
Woodward, A. S. 1889 D, p. 296.
    Cretaceous; New Jersey.

Superfamily HEXANCHOIDEA,[1] *nom. nov.*

Gill, T. 1882, Jordan & Gilbert's Synop. Fishes N. A., p. 967. (Opisthrarthri.)
  1884 B, p. 346. (Opisarthri.)
  1893 A, p. 129. (Opistharthri.)
Hasse, C. 1878 A. (Palæonotidani.)
  1879 A, p. 35. (Diplospondyli.)
Haswell, W. A. 1884 A, p. 112. (Palæoselachii.)
Jordan & Evermann 1896 A, p. 17. (Diplospondyli.)
Koken, E. 1889 A, p. 90. (Opisarthri.)
Osborn, H. F. 1899 I, p. 158. (Notidani.)
Woodward, A. S. 1889 D, p. ix. ("Opisthrarthri.")

HEXANCHIDÆ.

Gill, T., 1885, Report Smithsonian Inst. for 1884, p. 618.

The following authors, unless otherwise indicated, refer to this group under the name *Notidanidæ:*

Brown, C. 1900 A, pp. 169, 174.
Duméril, A. 1865 A, p. 430. (Notadani.)
Fritsch, A. 1895 A, p. 46.
Gadow, H. 1889 A. (Heptanchus.)
Gegenbaur, C. 1865 B.
  1872 A.
  1872 B.
Gill, T. 1893 A, p. 129. (Hexanchidæ.)
Günther, A. 1870 A, pp. 355, 397.
  1880 A, p. 324.
  1881 A, p. 685.
Hasse, C. 1879 A, p. 35.
  1882 A, p. 37.
Haswell, W. A. 1884 A, p. 112.
Jaekel, O. 1894 A.
Kölliker, A. 1863 A, p. 1. (Hexanchus.)
Müller and Henle 1841 A, p. 80.
Noetling, F. 1885 A, p. 16.
Reis, O. M. 1897 A, pp. 69, 86.
Sagemehl, M. 1883 A, p. 227.
Semon, R. 1899 A, p. 76.
Stannius, H. 1854 A. (Notidani.)
Steinmann and Döderlein 1890 A, p. 547.
White, P. J. 1895 A.
Woodward, A. S. 1889 D, p. 157.
Zittel, K. A. 1890 A, p. 65.

HEPTRANCHIAS Rafinesque. Type *Squalus cinereus* Gmelin.

Rafinesque, C. S. 1810, Caratteri di alcuni nuovi generi, p. 13.

Unless indicated otherwise, the following authors refer to this genus and *Hexanchus* under the name *Notidanus*.

Agassiz, L. 1843 B, iii, pp. 216, 308.
Brown, C. 1900 A.
Cuvier, G. 1817, Règne Anim, Ed. 1, p. 128.
Duméril, A. 1865 A, p. 432. (Heptanchus.)
Gegenbaur, C. 1872 A, pl. i, figs 1, 2; pl. iii, figs. 6, 7; pl. iv, figs. 1, 2; pl. vii, figs. 1, 2; pl. x; pl. xv, figs. 1, 2; pl. xvi, fig. 3; pl. xviii; pl. xx, figs. 2, 3, 5, 6, 8; pl. xxi, fig. 5. (Heptanchus and Hexanchus.)
  1872 B. (Hexanchus, Heptanchus.)
Gibbes, R. W. 1849 A, p. 195.
Günther, A. 1870 A, p. 397.
  1880 A, p. 325.
Hasse, C. 1882 A, p. 39, pl. vi (Hexanchus); p. 44. pl. vi, vii (Heptanchus).
Haswell, W. A. 1884 A, pp. 73, 88. (Heptanchus.)
Hubrecht, A. A. W. 1878 A.
Huxley, T. H. 1876 A.
Kölliker, A. 1860 B. (Heptanchus.)
Lawley, R. 1875 A.
Mayer, P. 1886 A, p. 263. (Heptanchus.)
Mivart, St. G. 1879 A, p. 443, pl. lxxv, fig. 2.
Müller and Henle, 1841, p. 80 (Hexanchus); p. 81 (Heptanchus).
Parker, T. J. 1890 A.
Pedroni, P. M. 1844 A, p. 281.
Pictet, F. J. 1854 A, p. 243.
Probst, J. 1879 A, p. 156.
Quenstedt, F. A. 1885 A, p. 262.
Rafinesque, C. S., 1810, Caratteri di alcuni nuovi generi, p. 14. (Hexanchus.)
Reis, O. M. 1897 A, p. 69.
Stannius, H. 1854 A.
Woodward, A. S. 1886 C.
  1889 D, p. 157.
  1892 G, figs. 9–12.
  1899 A, p. 6.
Zittel, K. A. 1890 A, p. 66.

Heptranchias ? plectrodon (Cope).

Cope, E. D. 1867 C, p. 141. (Notidanus.)
  Tertiary; Maryland.

Heptranchias ? primigenius (Agassiz).

Agassiz, L. 1843 B, iii, p. 218, pl. xxvii, figs. 6–8, 13–17; doubtfully figs. 4, 5. (Notidanus.)

The following authors refer this species to the genus *Notidanus*.

Agassiz, L. 1843 B, p. 220, pl. xxvii, figs. 9–12. (N. recurvus.)
Bassani, F. 1899 A, p. 25, pl. ii, figs. 13–15.
Cope, E. D. 1867 C, p. 141.
  1875 H, p. 362.
  1875 V, p. 29.
Dana, J. D. 1896 A, p. 901, fig. 1515.
Davis, J. W. 1888 A, p. 33, pl. vi, fig. 6.
Gibbes, R. W. 1849 A, p. 195, pl. xxv, fig. 95.
Lawley, R. 1875 A, p. 20, pl. i, figs. 1–5.
Leidy, J. 1877 A, p. 254.
Noetling, F. 1885 A, p. 17, pl. i, figs. 4, 5.
Pedroni, P. M. 1844 A, p. 281, pl. i, figs. 10, 11.

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[1] This name is proposed simply for the purpose of conforming to the rule, adopted by many zoologists, of deriving the superfamily name from the name of a typical family by changing the termination *idæ* into *oidea*.

Probst, J. 1858 A, p. 124, figs. 1-10.
1879 A, p. 158, pl. iii, figs. 1-5 (N. primigenius); p. 162, pl. iii, figs. 12-17 (N. recurvus); p. 166, pl. iii, figs. 6-11 (N. d'anconæ).
Quenstedt, F. A. 1852 A, p. 167, pl. xiii, fig. 3.
1885 A, p. 263, pl. xx, fig. 6.
Woodward, A. S. 1886 C, pp. 216, 253, pl. vi, figs. 19-22.
1889 D, p. 163.
Wyman, J. 1850 B, p. 234.
Zittel K. A. 1890 A, p. 66, fig. 60.

Eocene and Miocene; Europe: Eocene; Virginia: Miocene; New Jersey, Maryland, North Carolina.

XIPHODOLAMIA Leidy. Type *X. ensis* Leidy.

Leidy, J. 1877 A, p. 252.
Woodward, A. S. 1889 D, p. 168. (Syn. ? of Notidanus.)
1899 A, p. 6. (Syn. ? of Notidanus.)

Xiphodolamia ensis Leidy.

Leidy, J. 1877 A, p. 252, pl. xxxiv, figs. 25-30.
Woodward, A. S. 1889 D, p. 168. (Notidanus?)
1899 A, p. 6.

"Marls" (Cretaceous ?); New Jersey.

Superfamily GALEOIDEA,[1] *nom. nov.*

Gill, T. 1893 A, p. 129. (Asterospondyli, in part.)
Hasse, C. 1879 A, p. 48. (Asterospondyli.)
1882 A, pp. 186-284. (Asterospondyli.)
Haswell, W. A. 1884 A, p. 113. (Neoselachii, in part.)
Jaekel, O. 1890 A, p. 110. (Asterospondyli.)
1894 A, p. 58. (Actinospondyli, in part.)
Jordan and Evermann, 1896 A, p. 21. (Galei.)
Woodward, A. S. 1889 D, p. 157. (Asterospondyli, in part.)

LAMNIDÆ.

Davis, J. W. 1890 A, p. 365.
Duméril, A, 1865 A, p. 403. (Lamnæ.)
Gill, T. 1862 A, p. 397. (Lamnoidæ.)
Günther, A. 1870 A, pp. 354, 389.
1880 A, p. 319.
1881 A, p. 685.
Hasse, C. 1882 A, p. 214. ("Familie Lamna.")
Haswell, W. A. 1884 A, p. 114.
Jaekel, O. 1894 A, p. 157.
Jordan and Evermann 1896 A, p. 47.
Kiprijanoff, V. 1854 A, p. 373.
Kölliker, A. 1863 A. (Lamnoidei.)
Mayer, P. 1880 A, p. 277.
Müller and Henle 1838 A, p. 36. (Lamnoidea.)
1841 A, p. 66. (Lamnæ.)
Nicholson and Lydekker 1889 A, p. 944.
Probst, J. 1879 A, p. 127.
Stannius, H. 1854 A. (Lamnoidei.)
Steinmann and Döderlein 1890 A, p. 547.
Woodward, A. S. 1884 A. p. 228.
1889 D, p. 349.
Zittel, K. A. 1890 A, p. 81.

CARCHARIINÆ.

Duméril, A. 1865 A, p. 416. (Odontaspides.)
Gill, T. 1862 A, p. 398. (Odontaspidoidæ.)
1893 A, p. 130. (Carchariidæ.)
Jordan and Evermann 1896 A, p. 46. (Carchariidæ.)
Müller and Henle 1841 A, p. 73. (Odontaspides.

CARCHARIAS Raf. Type *C. taurus* Raf.

Rafinesque, C. S., 1810, Caratteri di alcuni nuovi generi, p. 10.
Agassiz, L. 1843 B (1838), iii, pp. 87, 287, 306. (Odontaspis.)
Davis, J. W. 1890 A, p. 368. (Odontaspis.)
Duméril, A. 1865 A, p. 417. (Odontaspis.)
Günther, A. 1870 A, p. 354. (Odontaspis.)
1880 A, p. 321. (Odontaspis.)
Hasse, C. 1882 A, pp. 160, 230. (Odontaspis.)
Jordan and Evermann 1896 A, p. 46. (Carcharias.)
Kölliker, A. 1863 A, p. 14, figs. 6, 7. (Odontaspis.)
Müller and Henle 1837 A, p. 114. (Odontaspis.)
1837 B, p. 397.
1841 A, p. 73. (Odontaspis.)
Pictet, F. J. 1854 A, p. 251. (Odontaspis.)
Probst, J. 1859 A. (Odontaspis.)
Woodward, A. S. 1884 A, p. 228. (Odontaspis.)
1889 D, p. 360. (Odontaspis.)
1899 A, p. 7. (Odontaspis.)
Woodward and Sherborn 1890 A, p. 129. (Odontaspis.)
Zittel, K. A. 1890 A, p. 81. (Odontaspis.)

Carcharias contortidens (Agassiz).

Agassiz, L. 1843 B, iii, p. 294, pl. xxxvii, *a*, figs. 17-23. [Lamna (Odontaspis).]
Emmons, E. 1858 B, p. 239. [Lamna (Odontaspis).]
Gemmellaro, G. G. 1857 A, p. 320, pl. i, fig. 13; pl. vi *a*, figs. 18-20. [Lamna (Odontaspis).]
Gibbes, R. W. 1849 A, p. 197, pl. xxvi, fig. 119. [Lamna (Odontaspis).]
Giebel, C. G. 1848 A, p. 363. (Odontaspis.)
Jaekel, O. 1898 C, p. 163. (Odontaspis.)
Probst, J. 1859 A, p. 101. [Lamna (Odontaspis)].
1879 A, p. 144, pl. ii, figs. 33-39. [Lamna (Odontaspis).]
Sismonda, E. 1849 A, p. 48, pl. ii, figs. 25-28. [Lamna (Odontaspis).]

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[1] See note under *Hexanchoidea*, p. 300.

Tuomey, M. 1858 A, p. 268. (Lamna.)
Woodward, A. S. 1889 D, p. 366. (Odontaspis.)
Eocene and Miocene; Europe: Eocene; South Carolina and Alabama: Miocene?; North Carolina.

Carcharias duplex (Agassiz)

Agassiz, L. 1843 B, iii, p. 297, pl. xxxvii *a*, fig. 1. [Lamna (Odontaspis).]
Tuomey M. 1858 A, p. 268. (Lamna.)
Woodward, A. S. 1889 I, p. 375. (Odontaspis.)
Said by Tuomey to occur in Tertiary of Alabama. The identification is doubtful.

Carcharias verticalis (Agassiz).

Agassiz, L. 1843 B, iii, p. 294, pl. xxxvii *a*, figs. 31, 32. (Odontaspis.)
Dames, W. 1883 B, p. 145, pl. iii, figs. 8–10. (Odontaspis.)
Gibbes, R. W. 1849 A, p. 198, pl. xxvi, figs. 124–127. [Lamna (Odontaspis).]
Giebel, C. G. 1848 A, p. 363. (Odontaspis.)
Tuomey, M. 1858 A, p. 268. (Lamna.)
Woodward, A. S. 1889 D, p. 375. (Odontaspis.)
Eocene: Europe, Egypt, South Carolina, Alabama.

LAMNINÆ.

Gill, T. 1862 A, p. 398.
Jordan and Evermann 1896 A, p. 47.

SPHENODUS Agassiz. Type *Sphenodus longidens* Agassiz.

Agassiz, L. 1843 B, iii, p. 288.
Davis, J. W. 1890 A, p. 349.
Quenstedt, F. A. 1852 A, p. 172.
1885 A, p. 270.
Woodward, A. S. 1889 D, p. 349. (Orthacodus, for Sphenodus Agassiz, regarded as preoccupied by Sphenodon Gray, 1831.)
Zittel, K. A. 1890 A, p. 81.

Sphenodus rectidens Emmons.

Emmons, E. 1858 B, p. 235, figs. 61, 62.
Cretaceous; North Carolina.

LAMNA Cuvier. Type *Squalus cornubicus* Gmelin.

Cuvier G. 1817, Règne Anim., ed. 1, v, ii, p. 126.
Agassiz, L. 1843 B, iii, pp. 287, 306.
Davis, J. W. 1888 A, p. 15.
1890 A, p. 371.
Duméril, A. 1865 A, p. 404.
Gibbes, R. W. 1849 A, p. 196.
Günther, A. 1870 A, p. 389.
Hasse, C. 1882 A, p. 215, pl. xxviii.
Jordan and Evermann 1896 A, p. 49.
Klunzinger, C. B. 1871 A, p. 669.
Kölliker, A. 1863 A, p. 8, fig. 3.
Müller and Henle 1837 A, p. 114.
1837 B, p. 397.
1841 A, p. 67.
Nicholson and Lydekker 1889 A, p. 944.
Pictet, F. J. 1854 A, p. 249.
Probst J. 1859 A.
Quenstedt, F. A. 1852 A, p. 170.
1885 A, p. 268.
Sismonda, E. 1849 A, p. 45.
Stephan, P. 1900 A, p. 327.
Tomes, C. S. 1898 A, p. 79.
Woodward, A. S. 1884 A, p. 228.
1889 D, p. 392.
Zittel, K. A. 1890 A, p. 82.

Lamna clavata Agassiz.

Agassiz, L. 1856 A, p. 275.
1857 A, p. 316, pl. i, figs. 19–21.
Woodward, A. S. 1889 D, p. 407.
Miocene; California.

Lamna crassidens Agassiz.

Agassiz, L. 1843 B, iii, p. 292, pl. xxxv, figs. 8–21.
Emmons, E. 1858 B, p. 240.
Gemmellaro, G. G. 1857 A, p. 318, pl. vi *a*, figs. 15, 16.
Gibbes, R. W. 1846 A, p. 42.
1849 A, p. 197, pl. xxvi, figs. 116–118.
Probst, J. 1879 A, p. 373, pl. ii, figs. 64–68.
Woodward, A. S. 1889 D, p. 373. (Odontaspis?)
Wyman, J. 1850 B, p. 233.
Eocene, Europe, North Carolina (Emmons), South Carolina: Miocene?; Virginia (Wyman).

Lamna cuspidata Agassiz.

Agassiz, L. 1843 B, iii, p. 290, pl. xxxvii*a*, figs. 43–50.
1843 B, iii, p. 291, pl. xxxvii*a*, figs. 51–53 (L. denticulata); p. 293, pl. xxxvii*a*, figs. 27–30 [L. (Odontaspis) hopei]; p. 295, pl. xxxvii*a*, figs. 24–26 [L. (Odontaspis) dubia].
Cope, E. D. 1867 C, p. 142. (L. cuspidata, L. denticulata?, L. hopei.)
1875 E, p. 297.
1875 H, p. 362. (L. cuspidata, L. denticulata.)
1875 V, p. 29.
Geinitz, H. B. 1883 A, p. 5, pl. i, figs. 1–3.
Gibbes, R. W. 1846 A, p. 42.
1849 A, p. 197, pl. xxv, figs. 103–106.
1850 F. (L. cuspidata and L. denticulata.)
Jaekel, O. 1898 C, p. 162.
Leidy, J. 1872 F.
1873 B, p. 304, pl. xviii, figs. 44, 45. (L. cuspidata?).
Lyell, C. 1845 A, p. 415.
1859 A, p. 101. [Lamna (Odontaspis).]
Noetling, F. 1885 A, p. 71, pl. v, figs. 1–3. (Odontaspis hopei.)

Probst, J. 1879 A, p. 149, pl. ii, figs. 59–63. [Lamna (Odontaspis).]

Quenstedt, F. A. 1852 A, p. 171, pl. xiii, fig. 17 (Lamna cuspidata); fig. 15 (L. denticulata).
1885 A, p. 268, pl. xx, fig. 27.

Sauvage, H. E. 1882, p. 48, pl. i, figs. 15, 16.

Sismonda E. 1849 A, p. 47, pl. ii, figs. 29–32 (Lamna cuspidata); p. 48, pl. ii, figs. 17–22 (Lamna dubia).

Tuomey, M. 1858 A, p. 268.

Woodward, A. S. 1889 D, p. 368. (Odontaspis.)

Eocene; Europe, Georgia, Alabama, Virginia, Kansas, South Carolina: Miocene; Maryland, North Carolina (Cope).

Lamna elegans Agassiz.

Agassiz, L. 1843 B, iii, p. 289, pl. xxxv, figs. 1–5 (not figs. 6,7); pl. xxxvii*a*, fig. 59 (not fig. 58).

Bassani, F. 1899 A, p. 13, pl. i, figs. 1–17. (Odontaspis).

Clark, W. B. 1895 A, p. 4.
1897 A, p. 61.

Cope, E. D. 1867 C, p. 142.
1875 H, p. 362.
1875 V, p. 29.

Dana, J. D. 1896 A, p. 901, fig. 1514.

Davis, J. W. 1888 A, p. 15, pl. iii, fig. 1. (L. huttoni.)

Dixon, F. 1850 A, p. 203, pl. x, figs. 28–31.
1878 A, p. 249, pl. x, figs. 29–31.

Emmons, E. 1858 B, p. 239, figs. 70–71*a*.

Geinitz, H. B. 1883 A, p. 5, pl. i, figs. 4–6.

Gibbes, R. W. 1846 A, p. 42.
1849 A, p. 196, pl. xxv, figs. 96–102.

Leidy, J. 1872 F.
1873 B, p. 305.
1877 A, p. 254.

Noetling, F. 1885 A, p. 61, pl. iv, figs. 1–9.

Owen, R. 1845 B, p. 32, pl. v, figs. 3, 4; pls. vi, vii.

Sismonda, E. 1849 A, p. 46, pl. ii, figs. 33–35.

Tuomey, M. 1858 A, p. 261.

Woodward, A. S. 1884 A, p. 228.
1889 D, p. 361. (Odontaspis.)
1899 A, p. 8, pl. i, figs. 15–18. (Odontaspis.)

Wyman, J. 1850 B, p. 233.

Eocene and Miocene; Europe, New Zealand, Australia, and United States: Eocene; South Carolina, North Carolina, Alabama, and Virginia: Miocene; Maryland.

Lamna gracilis Agassiz.

Agassiz, L. 1843 B, iii, p. 295, pl. xxxvii *a*, figs. 2–4. [Lamna (Odontaspis).]

Eichwald, E. 1868 A, p. 1222, pl. xxxviii, fig. 10.

Gibbes, R. W. 1849 A, p. 198, pl. xxvi, figs. 128–130. [Lamna (Odontaspis).]

Giebel, C. G. 1847 A, p. 362.

Pictet and Campiche 1858 A, p. 88, pl. xi, figs. 9–18. (Odontaspis.)

Sauvage, H. E. 1879 A, p. 59, pl. iii, figs. 1–12. (Odontaspis.)

Woodward, A. S. 1889 D, p. 359. (Scapanorhynchus?).

Cretaceous; Europe: Eocene; South Carolina.

Lamna macrorhiza Cope.

Cope, E. D. 1875 E, p. 297, pl. xlii, figs. 9, 10.

Williston, S. W. 1900 A, p. 38.
1900 B, p. 249.

Woodward, A. S. 1889 D, p. 399.

Cretaceous (Niobrara); Kansas: Cretaceous of Europe.

Lamna manitobensis Whiteaves.

Whiteaves, J. F. 1889 B, p. 192, pl. xxvi. figs. 6*a*, 6*c*.

Cretaceous (Niobrara); Manitoba.

Lamna mudgei Cope.

Cope, E. D. 1875 E, p. 297, pl. xlii, figs. 11, 12.

Williston, S. W. 1900 A, p. 38.
1900 B, p. 248.

Woodward, A. S. 1889 D, p. 408.

Cretaceous (Niobrara); Kansas: ("Greensand"); New Jersey.

Lamna ornata Agassiz.

Agassiz, L. 1856 A, p. 275.
1857 A, p. 316, pl. i, fig. 28.

Woodward, A. S. 1889 D, p. 408.

Miocene; California.

Lamna ? quinquelateralis Cragin.

Cragin, F. W. 1894 A, p. 72, pl. ii, figs. 9, 10.

Williston, S. W. 1900 A, p. 39.
1900 B, p. 250.

Cretaceous (Comanche); Kansas.

Lamna rhaphiodon Agassiz.

Agassiz, L. 1843 B, iii, p. 296, pl. xxxvii *a*, figs. 12–16, not fig. 11. [Lamna (Odontaspis).]

Tuomey, M. 1858 A, p. 268.

Reported from the Tertiary of Alabama by Tuomey, but the identification is doubtful. For synonymy and literature see Woodward, A. S. 1889 D, p. 353. See also under *Lamna texana*.

Lamna subulata Agassiz.

Agassiz, L. 1843 B, iii, p. 296, pl. xxxvii *a*, figs. 5–7.

Cope, E. D. 1867 C, p. 142.

Geinitz, H. B. 1875 A, p. 209, pl. xxxviii, figs. 29–36.

Hébert, E. 1855 C, p. 355, pl. xxvii, fig. 10.

Professor Cope has reported this species with doubt from the Miocene of Charles County, Md. For synonymy and literature of the species see Woodward, A. S. 1889 D, p. 356, under name of *Scapanorhynchus ? subulatus*.

Lamna texana Roemer.

Roemer, F. 1849 A, p. 419.

Cope, E. D. 1875 E, p. 296.
1875 F, p. 63.
1875 K, p. 38.

Credner, H. 1870 A, p. 242.

Dana, J. D. 1896 A, p. 843, fig. 1402.

Leidy, J. 1873 B, p. 305, pl. xviii, figs. 46–49. (L. elegans?.)

Newberry, J. S. 1876 A, p. 141.

Roemer, F. 1852 A, p. 29, pl. i, figs. 7*a*, 7*b*.

Williston, S. W. 1900 A, p. 40, pl. viii, fig. 4; pl. xiv, fig. 5. (Scapanorhynchus rhaphiodon.)

Williston, S. W. 1900 B, p. 251, pl. xxvi, fig. 4; pl. xxxii, fig. 5. (Scapanorhynchus raphiodon.)
Woodward, A. S. 1889 D, p. 353.
Cretaceous; Texas, Kansas, Alabama, Mississippi, New Jersey, Kansas.

Lamna sp. indet.

Williston, S. W. 1900 A, p. 38, pl. xii, figs. 5, 6.
1900 B, p. 249, pl. xxx, figs. 5, 6.
Cretaceous (Kiowa shales); Kansas.

LEPTOSTYRAX Willist. Type *L. bicuspidatus* Willist.

Williston, S. W. 1900 A, p. 42.

Leptostyrax bicuspidatus Willist.

Williston, S. W. 1900 A, p. 42.
1900 B, p. 253, pl. xxiv, figs. 15, 15*a*; pl. xxvi, fig. 7.
Cretaceous (Mentor beds); Kansas.

OTODUS Agassiz. Type *O. obliquus* Agassiz.

Agassiz, L. 1843 B, iii, pp. 266, 307.
1844 A.
Davis, J. W. 1888 A, p. 14.
1890 A, pp. 367, 401.
Gibbes, R. W. 1849 A, p. 198.
Hasse, C. 1882 A, p. 206, pl. xxvii.
Kiprijanoff, V. 1854 A, p. 377.
Nicholson and Lydekker 1889 A, p. 944.
Pictet, F. J. 1854 A, p. 245.
Pictet and Campiche 1858 A, p. 81.
Probst, J. 1879 A, p. 154.
Sismonda, E. 1849 A, p. 38.
Woodward, A. S. 1884 A, p. 229.
1889 D, p. 392. (Syn. of Lamna.)
1899 A, p. 10.
Zittel, K. A. 1890 A, p. 83.

Otodus ? apiculatus Agassiz.

Agassiz, L. 1843 B, iii, p. 275, pl. xxxii, figs. 32–35.
Eastman, C. R. 1895 A, p. 178. (Syn. of Oxyrhina hastalis.)
Gibbes, R. W. 1846 A, p. 42.
1849 A, p. 200, pl. xxvi, fig. 147.
Woodward, A. S. 1889 D, p. 387.
Eocene; South Carolina.

Otodus appendiculatus Agassiz.

Agassiz, L. 1843 B (1835), iii, p. 270, pl. xxxii, figs. 1–25.
Cope, E. D. 1867 C, p. 142.
1875 E, p. 295.
1875 H, p. 362.
Credner, H. 1870 A, p. 242.
Dana, J. D. 1896 A, p. 843, figs. 1401, 1404.
Davis, J. W. 1890 A, p. 402, pl. xli, figs. 1–11.
Dixon, F. 1850 A, pl. xxx, fig. 25; pl. xxxi, fig. 17.
Emmons, E. 1858 B, p. 240.
Geinitz, H. B. 1875 A, p. 208.
1839 A, p. 11, pl. i, fig. 3 (Squalus cornubicus); p. 12, pl. i, fig. 5 (Odontaspis rhappiodon).
Gibbes, R. W. 1846 A, p. 42.
1849 A, p. 199, pl. xxvi, figs. 138–140.
1850 F.
Giebel, C. G. 1848 A, p. 42.
Hébert, E. 1855 C, p. 355.
Pictet, F. J. 1854 A, p. 247.
Pictet and Campiche 1858 A, p. 82, pl. x, figs. 3, 4.
Priem, F. 1897 A, p. 40, pl. i, figs. 1–8. (Lamna.)
Quenstedt, F. A. 1852 A, p. 170, pl. xiii, fig. 8.
1885 A, p. 268, pl. xx, figs. 23, 24.
Reuss, A. E. 1846 A, p. 5, pl. iii, figs. 22–29.
Roemer, F. 1849 A, p. 419.
1852 A, p. 30, pl. i, figs. 9*a*, 9*b*.
Sauvage, H. E. 1870 A, p. 26, figs. 57–59 (O. appendiculatus); p. 34, figs. 73–75 (Lamna acuminata).
1879 A, p. 60, pl. iii, fig. 21 (O. appendiculatus); p. 61, pl. iii, figs. 15–20 (Lamna acuminata).
Spillman, W, in Hilgard, E. W. 1860 A, p. 389.
Williston, S. W. 1900 A, p. xiv, figs. 3–3*c*. (Lamna.)
1900 B, p. 247, pl. xxvi, figs. 3–3*c*; pl. xxxi, figs. 47–49. (Lamna.)
1884 A, p. 229, fig. 131.
Woodward, A. S. 1889 D, p. 393. (Lamna.)
Wyman, J. 1850 B, p. 234.
Cretaceous; Europe, Australia, New Jersey, North Carolina, Mississippi: Tertiary; Virginia, Texas, North Carolina.

Otodus crassus Agassiz.

Agassiz, L. 1843 B, iii, p. 271, pl. xxxvi, figs. 29–31.
Gibbes, R. W. 1849 A, p. 200, pl. xxvi, fig. 142.
Kiprijanoff, V. 1854 A, p. 384, pl. ii, figs. 4–20.
Woodward, A. S. 1889 D, p. 400. (Lamna.)
Cretaceous; Europe, Alabama.

Otodus divaricatus Leidy.

Leidy, J. 1872 M, p. 162.
Cope, E. D. 1874 C, p. 48.
1875 E, p. 295.
1873 B, pp. 305, 351, pl. xviii, figs. 26–28.
Williston, S. W. 1900 A, p. 37, pl. vi, figs. 1–1*b*. (Lamna sulcata.)
1900 B, p. 248, pl. xxiv, figs. 1–1*b*. (L. sulcata.)
Woodward, A. S. 1889 D, p. 398. (Syn. of Lamna sulcata.)
Cretaceous; Texas, Kansas.

Otodus levis Gibbes.

Gibbes, R. W. 1847 A, p. 268.
1849 A, p. 199, pl. xxvi, fig. 141.
Woodward, A. S. 1889 D, p. 408. (Lamna.)
Eocene; South Carolina, New Jersey.

Otodus macrotus Agassiz.

Agassiz, L. 1843 B, iii, p. 273, pl. xxxii, figs. 29–31.

1843 B, iii, pl. xxxv, figs. 6, 7; pl. xxxvii *a*, fig. 58 (Lamna elegans, in part); p. 290, pl. xxxvii *a*, figs. 35–42 (Lamna compressa).

Dixon, F. 1850 A, p. 204, pl. xi, figs. 20, 21. (O. lanceolatus, not of Agassiz.)

1878 A, p. 249, pl. xi, figs. 20, 21. (O. lanceolatus.)

Emmons, E. 1858 B, p. 240.

Gibbes, R. W. 1846 A, p. 42.

1849 A, p. 200, pl. xxvi, figs. 143, 144; p. 197, pl. xxv, figs. 107–112. (Lamna compressa.)

1850 F. (Lamna compressa.)

Winckler, T. C. 1874 B, p. 295.

Woodward, A. S. 1889 D, p. 402. (Lamna.)

1899 A, p. 9, pl. i, figs. 19, 20.

Wyman, J. 1850 B, p. 233.

Eocene; Europe, New Zealand, South Carolina, Virginia.

Otodus obliquus Agassiz.

Agassiz, L. 1843 B, iii, p. 267, pl. xxxi; pl. xxxvi, figs. 22–27.

1843 B, iii, p. 269, pl. xxxvii, figs. 19–23. (O. lanceolatus.)

Bassani, F., 1899 A, p. 18, pl. i, figs. 32–35. (Lamna.)

Clark, W. B. 1895 A, p. 4. (Lamna? obliqua.)

1897 A, p. 61. (Lamna? obliqua.)

Cope, E. D. 1867 C, p. 142.

Dames, W. 1883 B, p. 145, pl. iii, fig. 6.

Davis, J. W. 1890 A, p. 407, pl. xii, fig. 13.

Dixon, F. 1850 A, p. 204, pl. x, figs. 32–35; pl. xv, fig. 11.

1878 A, p. 249, pl. x, figs. 32–35; pl. xv, fig. 11.

Gibbes, R. W. 1846 A, p. 42.

1849 A, p. 199, pl. xxvi, figs. 131–137.

1850 F.

Geinitz, H. B. 1883 A, p. 6, pl. i, figs. 12–18.

Morton, S. G. 1834 A, pl. xi, fig. 1 (Lamna obliqua); fig. 5 (Lamna lanceolata, *fide* Agassiz).

1835 A, p. 277. (Lamna lanceolata.)

1842 A, p. 220. (Lamna lanceolata.)

Noetling, F. 1885 A, p. 84, pl. vi, figs, 4–6. (Carcharodon.)

Woodward, A. S. 1884 A, p. 229. (Otodus.)

1889 D, p. 404. (Lamna? obliqua.)

1899 A, p. 10.

Wyman, J. 1850 B, p. 234. (O. obliquus and O. lanceolatus.)

Upper Cretaceous and Eocene; Europe and Egypt: Eocene; Virginia, New Jersey: Miocene; Virginia, North Carolina (*fide* Cope).

Otodus trigonatus Agassiz.

Agassiz, L. 1843 B, iii, p. 274, pl. xxxvi, figs. 35–37.

?Gibbes, R. W. 1849 A, p. 200, pl. xxvi, figs. 145, 146.

Woodward, A. S. 1889 D, p. 401. (Lamna.)

1899 A, p. 10, pl. i, figs. 23, 24.

Upper Eocene; Bavaria, South Carolina (?).

Isurus Rafinesque. Type *I. oxyrhynchus* Raf. = *Oxyrhina spallanzanii* Bonap.

Rafinesque, C. S. 1810, Caratteri di alcuni nuovi generi, p. 11.

Unless otherwise stated, this genus is referred to by the following writers under the name *Oxyrhina*. This name is antedated by that of Rafinesque, *Isurus*.

Agassiz, L. 1843 B (1838), iii, pp. 86, 276, 307 (Oxyrhina, type *O. spallanzanii*).

1844 A.

Davis, J. W. 1890 A, pp. 367, 371.

Duméril, A. 1865 A, p. 407.

Eastman, C. R. 1895 A.

Gibbes, R. W. 1849 A, p. 201.

Hasse, C. 1882 A, p. 230, pl. xxxi.

Jordan and Evermann, 1896 A, p. 47. (Isurus.)

Kölliker, A. 1863 A, p. 11, figs. 4, 5.

Leidy, J. 1873 B, p. 308.

Müller and Henle, 1837 A, p. 114.

1837 B, p. 397.

1841 A, p. 681.

Nicholson and Lydekker, 1889 A, p. 944.

Pictet, F. J. 1854 A, p. 247.

Pictet and Campiche, 1858 A, p. 83.

Probst, J. 1879 A, p. 128.

Quenstedt, F. A. 1852 A, p. 172.

1885 A, p. 270.

Steinmann and Döderlein, 1890 A, p. 547.

Woodward, A. S. 1884 A, p. 229.

1889 D, p. 376.

Zittel, K. A. 1890 A, p. 81.

Isurus crassus (Agassiz).

Agassiz, L. 1843 B, iii, p. 283, pl. xxxvii, fig. 16 (not pl. xxxiv, fig. 14). (Oxyrhina.)

Eastman, C. R. 1895 A, p. 182. (Oxyrhina.)

Gemmellaro, G. G. 1857 A, p. 317, pl. i, fig. 11. (Oxyrhina.)

Gibbes, R. W. 1849 A, p. 202, pl. xxvii, figs. 159, 160. (Oxyrhina.)

Woodward, A. S. 1889 D, p. 389. (Oxyrhina.)

1894 B. (Oxyrhina.)

Eocene; South Carolina, Alabama.

Isurus desorii (Agassiz).

Agassiz, L. 1843 B, iii, p. 282, pl. xxxvii, figs. 8–13. (Oxyrhina.)

1843 B, iii, p. 282, pl. xxxvii, figs. 3–5. (Oxyrhina leptodon.)

Bassani, F. 1899 A, p. 13, pl. ii, figs, 24–38. (Oxyrhina.)

Cope, E. D. 1867 C, p. 142. (Oxyrhina.)

1875 V, p. 29. (Oxyrhina.)

Eastman, C. R. 1895 A, p. 180. (Oxyrhina.)

Emmons, E. 1858 B, p. 236, fig. 67. (Oxyrhina.)

Gemmellaro, G. G. 1857 A, p. 314, pl. vi *a*, figs. 9–11 (O. leptodon); pl. vi *a*, figs. 12, 13 (O. desorii); p. 319, pl. vi a, fig. 17 (Lamna lyellii).

Gibbes, R. W. 1847 A, p. 267. (Oxyrhina).

1849 A, p. 203, pl. xxvii, figs. 169–171 (O. desorii); p. 203, pl. xxvii, figs. 172, 173 (O. wilsonii).

1850 F. (Oxyrhina.)

Noetling, F. 1885 A, p. 50, pl. iii. (O. xiphodon.)

Probst, J. 1879 A, p. 131, pl. ii, figs. 7–13 (O. desorii); p. 141, pl. ii, figs. 69, 75 (Alopecias gigas).

Sismonda, E. 1849 A, p. 40, pl. ii, figs. 7–16. (Oxyrhina.)

Woodward, A. S. 1889 D, p. 382. (Oxyrhina.)

Tertiary; Europe and United States: Eocene; Alabama, North Carolina, South Carolina: Miocene; Maryland (*fide* Cope).

For additional references to descriptions of foreign specimens see Woodward, A. S. 1889 D, pp. 382, 383.

Isurus hastalis (Agassiz).

Agassiz, L. 1843 B, iii, p. 277, pl. xxxiv, excl. figs. 1, 2, 14. (Oxyrhina.)

1843 B, iii, p. 278, pl. xxxiii, figs. 11–17 (O. xiphodon); p. 279, pl. xxxvii, figs. 17, 18 (O. trigonodon); p. 279, pl. xxxvii, figs. 14, 15 (O. plicatilis); p. 281, pl. xxxiii, fig. 10 (O. retroflexa); p. 281, pl. xxxvii, figs. 1, 2 (O. quadrans).

Alessandri, G. de 1896 A, p. 263, pl. i. (Oxyrhina.)

Clarke, W. B. 1895 A, p. 4. (Oxyrhina.)

1897 A, p. 61. (Oxyrhina.)

Cope, E. D. 1867 C, p. 142. (O. hastalis, O. xiphodon.)

1875 H, p. 362. (O. xiphodon.)

Eastman, C. R. 1895 A, p. 178. (Oxyrhina.)

Emmons, E. 1858 B, p. 236, figs. 64–66. (O. xiphodon, O. hastilis.)

Gemmellaro, G. G. 1857 A, p. 312, pl. vi, fig. 5 (O. hastalis); p. 313, pl. vi *a*, figs. 6–8 (O. xiphodon).

Gibbes, R. W. 1846 A, p. 43 (O. xiphodon, O. hastalis); p. 42 (O. retroflexa).

1849 A, pp. 197, 201, pl. xxvi, figs. 148–152 (O. hastalis); p. 201, pl. xxvii, figs. 153, 154 (O. xiphodon); p. 202, pl. xxxvii, figs. 155–157 (O. plicatilis).

1850 F, p. 70.

Giebel, C. G. 1848 A, p. 357. (Oxyrhina.)

Hitchcock, E., 1835, Geol. Mass., pl. xiii, fig. 37. (No name or description.)

Leidy, J. 1877 A, p. 254. (O. xiphodon.)

Lyell, Chas. 1843 C, p. 32. (Oxyrhina.)

1845 A, p. 415. (Lamna xiphodon.)

Probst, J. 1879 A, p. 129, pl. ii, figs. 1–6 (O. hastalis); p. 132, pl. ii, figs. 14–19 (O. xiphodon).

Quenstedt, F. A. 1885 A, p. 270, fig. 84. (Oxyrhina.)

Sauvage, H. E. 1875 A, p. 633. (O. xiphodon.)

Sismonda, E. 1849 A, p. 40, pl. i, figs. 41–47 (O. hastalis); p. 42, pl. i, figs. 48–50 (O. plicatilis); figs. 51, 52 (O. xiphodon); p. 43, pl. ii, figs. 1-6 (O. isocelica).

Tuomey, M. 1858 A, p. 268. (O. hastata, O. xiphodon.)

Woodward, A. S. 1889 D, p. 385. (Oxyrhina.)

1900 A, p. 4, pl. i, figs. 6–8. (Oxyrhina.)

Wyman, J. 1850 B, p. 234. (O. hastalis, O. xiphodon.)

Tertiary; Europe, Australia, New Zealand, and United States: Eocene; Alabama, South Carolina: Miocene; Virginia, Maryland, South Carolina, North Carolina: Pliocene?; Argentine Republic.

For additional references to foreign specimens see Woodward, A. S. 1889 D, pp. 385, 386, and Eastman, C. R. 1895 A, p. 178.

Isurus mantellii (Agassiz).

Agassiz, L. 1843 B, iii, p. 280, pl. xxxiii, figs. 1–5, 7–9. (Oxyrhina.)

1843 B, iii, p. 292, pl. xxxvii *a*, fig. 54. (Lamna acuminata.)

Cope, E. D. 1875 E, p. 296. (Oxyrhina extenta.)

Credner, H. 1870 A, p. 242. (Oxyrhina.)

Dana, J. D. 1896 A, p. 843, fig. 1405. (Oxyrhina.)

Davis, J. W. 1890 A, p. 391, pl. xxxix, figs. 1–7. (Oxyrhina.)

Dixon, F. 1850 A, pl. xxx, fig. 24 (O. mantelli); pl. xxx, fig. 19 (Lamna acuminata).

Eastman, C. R. 1895 A, pls. xvi–xviii. (Oxyrhina.)

Fritsch, A. 1878 A, p. 7, fig. 12. (Oxyrhina.)

Geinitz, H. B. 1875 A, p. 207, pl. xxxviii, figs. 1–21.

Gibbes, R. W. 1842 A, p. 43. (Oxyrhina.)

1849 A, p. 197, pl. xxv, figs. 113–115 (Lamna acuminata); p. 202, pl. xxvii, fig. 158 (Oxyrhina).

Giebel, C. G. 1848 A, p. 357. (Oxyrhina.)

Hilgard, E. W. 1860 A, p. 389. (Oxyrhina.)

Leidy, J. 1872 M, p. 162. (Oxyrhina extenta.)

1873 B, pp. 302, 351, pl. xviii, figs. 21–25. (Oxyrhina extenta.)

Morton, S. G. 1834 A, pl. xi, fig. 4. (Lamna mantelli, *fide* Agassiz.)

1835 A, p. 277. (L. mantelli, L. acuminata.)

1842 A, p. 219. (Lamna mantelli and L. acuminata.)

Newberry, J. S. 1876 A, p. 141. (Oxyrhina.)

Quenstedt, F. A. 1852 A, p. 172, pl. xiii, fig. 14. (Oxyrhina.)

1885 A, p. 270, pl. xx, fig. 37. (Oxyrhina.)

Reuss, A. E. 1846 A, p. 5, pl. iii, figs. 1-6. (Oxyrhina.)

Roemer, F. 1849 H, p. 419. (Oxyrhina.)

1852 A, p. 29, pl. 1, figs. 6 *a*, *b*. (Oxyrhina.)

Sauvage, H. E. 1870 A, p. 21, figs. 39–41 (Oxyrhina); p. 24, figs. 54–56 (Otodus oxyrhinoides).

Williston, S. W. 1900 A, p. 36, pl. xiii, figs. 41–46; pl. xiv, figs. 2–2*m*. (Oxyrhina.)

1900 B, p. 246, pl. xxxi, figs. 41–46; pl. xxxii, figs. 2–2*m*.

Woodward, A. S. 1884 A, p. 229, fig. 136. (Oxyrhina.)

1889 D, p. 376. (Oxyrhina.)

Cretaceous; Europe, Alabama, New Jersey, Virginia, Mississippi, Kansas, Texas.

Isurus minutus (Agassiz).

Agassiz, L. 1843 B, iii, p. 285, pl. xxxvi, figs. 39–47. (Oxyrhina.)

Cope, E. D. 1867 C, p. 142. (Oxyrhina.)

1875 H, p. 362. (Oxyrhina.)

1875 V, p. 29. (Oxyrhina.)

Eastman, C. R. 1895 A, p. 182. (Oxyrhina.)

Gemmellaro, G. G. 1857 A, p. 316, pl. vi*a* fig. 14. (Oxyrhina.)

Gibbes, R. W. 1849 A, p. 202, pl. xxvii, figs. 161–163; not fig. 164. (Oxyrhina.)

Sismonda, E. 1849 A, p. 44, pl. ii, figs. 36–39.

Woodward, A. S. 1889 D, p. 391. (Oxyrhina).

Eocene; South Carolina, Maryland, New Jersey, North Carolina: Miocene; North Carolina (*fide* Cope).

It is not improbable that the identification of the American specimens assigned to this species is wrong. See *Carcharhinus gibbesii*.

Isurus planus (Agassiz).

Agassiz, L. 1856 A, p. 274. (Oxyrhina.)
1857 A, p. 315, pl. i, figs. 29, 30. (Oxyrhina.)
Eastman, C. R. 1895 A, p. 183. (Oxyrhina.)
Woodward, A. S. 1889 D, p. 391. (Oxyrhina.)
Miocene; California.

Isurus sillimanii (Gibbes).

Gibbes, R. W. 1847 A. p. 268. (Oxyrhina.)
Cope, E. D. 1867 C, p. 142. (Oxyrhina.)
1875 V, p. 29. (Oxyrhina.)
Eastman, C. R. 1895 A, p. 181. (Oxyrhina.)
Gibbes, R. W.. 1849 A, p. 202, pl. xxvii, figs. 165–168. (Oxyrhina.)
1850 F. (Oxyrhina.)
Woodward, A. S. 1889 D, p. 391. (Oxyrhina.)
Eocene; South Carolina: Miocene: Maryland, North Carolina (*fide* Cope).

Isurus tumulus (Agassiz).

Agassiz, L. 1856 A, p. 275. (Oxyrhina.)
1857 A, p. 316, pl. i, figs. 26, 27, 36, 37, 42–44. (Oxyrhina.)
Eastman, C. R. 1895 A, p. 183. (Oxyrhina.)
Woodward, A. S. 1889 D, p. 391. (Oxyrhina.)
Miocene; California.

Isurus sp. indet.

Cope E. D. 1875 E, p. 296.
1875 F, p. 96.

CARCHARODONTINÆ.

Gill, T. 1893 A, p. 130.
Jordan and Evermann, 1896 A, p. 47.

CARCHARODON A. Smith. Type *Squalus carcharias* Linn.

Smith, A. in Müller and Henle 1838 A, p. 37.
Agassiz L., 1843 B. iii, pp. 245, 307.
1844 A.
Davis, J. W. 1888 A, p. 8.
Duméril, A. 1865 A, p. 410.
Gibbes, R. W. 1848 B, p. 142.
1849 A, p. 191.
Günther, A. 1870 A, p. 391.
1880 A, p. 320.
Hasse, C. 1882 A, p. 224.
Haswell, W. A. 1884 A, p. 83.
Müller & Henle 1841 A, p. 70.
Kölliker, A. 1863 A, p. 15, figs. 8, 9.
Nicholson & Lydekker 1889 A, p. 945.
Parker, T. J. 1887 A.
Pedroni, P. M. 1844 A, p. 285.
Pictet, F. J. 1854 A, p. 237.
Probst, A. 1879 A, p. 137.
Sismonda, E. 1849 A, p. 33.
Steinmann & Döderlein 1890 A, p. 548.
Woodward, A. S. 1884 A, p. 229.
1889 D, p. 410.
Zittel, K. A. 1890 A, p. 84.

Carcharodon auriculatus (Blainville).

Blainville, H. M. D., 1818, Nouv. Dict. d'Hist. Nat., xxvii, p. 384. (Squalus.)
Agassiz, L. 1843 B, iii, p. 254, pl. xxviii, figs. 17–19 (C. auriculatus); p. 255, pl. xxviii, figs. 20–25 (C. angustidens); pl. xxx, fig. 3 (C. lanceolatus, C. angustidens in text); p. 256, pl. xxx*a*, figs. 8, 9 (C. turgidus); p. 257, pl. xxx, fig. 1 (C. lanceolatus); p. 257, pl. xxx*a*, fig. 14 (C. toliapicus); p. 258 pl. xxviii, figs. 11–16 (C. heterodon); p. 258, pl. xxviii, figs. 8–10 (C. megalotis); p. 259, pl. xxviii, fig. 7 (C. disauris).
Bassani. F., 1899 A. p. 22 pl. i, figs. 30–39.
Cope, E. D. 1867 C, p. 142. (C. angustidens.)
1875 E, p. 296. (C. angustidens.)
1875 H, p. 362. (C. angustidens.)
1875 V, p. 29. (C. angustidens.)
Dana, J. D., 1896 A, p. 901, fig. 1513. (C. angustidens.)
Davis, J. W. 1880 A, p. 9, pl. i, figs. 4–6; pl. iv, fig. 22. (C. angustidens.)
Dixon, F 1850 A, p. 204, pl. xi, fig. 19. (C. heterodon.)
1858 A, p. 249, pl. xi, fig. 19. (C. heterodon.)
Emmons, E. 1858 B, p. 231, fig. 57; p. 233. (C. crassidens, Emmons, *non* Sismonda.)
Gemmellaro, G. G. 1857 A, p. 304, pl. v, figs. 6*a*–8. (C. angustidens and var. turgidus.)
Gibbes, R. W. 1846 A, p. 42. (C. auriculatus, angustidens, heterodon, megalotis, lanceolatus, semiserratus, turgidus.)
1847 A, p. 267. (C. acutidens.)
1848 B, pp. 145, 146, pls. xix–xxi, figs. 10–38. (C. angustidens, with varieties auriculatus, heterodon, megalotis, lanceolatus, semiserratus, toliapicus, and turgidus.)
1848 B, p. 146, pl. xxi, figs. 39–44. (C. acutidens.)
1850 F. (C. acutidens, angustidens.)
Giebel, C. G. 1848 A, p. 350 (C. angustidens, C. auriculatus); p. 351 (C. heterodon, lanceolatus, toliapicus, turgidus).
Hilgard, E. W. 1860 A, pp. 132, 142. (C. angustidens.)
Leidy, J. 1876 A, p. 222. (C. angustidens.)
1876 E. (C. angustidens.)
1877 A, p. 253. (C. angustidens.)
Morton, S. G. 1834 A, pl. xii, figs. 3, 4, 5. (Carcharias lanceolatus and C. megalotis, *fide* Agassiz.)
1835 A, p. 277. (C. megalotis.)
1842 A, p. 220. (Carcharias myalotis.)
Noetling, F. 1885 A, p. 82, pl. vi, figs. 1–3. (C. angustidens.)
Pedroni, P. M. 1844, A, p. 285.
Röse, C. 1897 A, p. 35, figs. 5, 6. (C. angustidens.)
Tuomey, M. 1858 A, p. 268. (Carcharias angustidens, auriculatus, heterodon.)
Wailes, B. L. C. 1854 A, p. 277. (C. angustidens.)
Woodward, A. S. 1884 A, p. 229, fig. 141. (C. auriculatus.)
1889 D, p. 411. (C. auriculatus.)
Wyman, J. 1850 B, p. 234. (C. angustidens.)
Tertiary; Europe, North Africa, Arabia, Victoria, New Zealand, North America: Eocene; Alabama, Mississippi, North Carolina, South Carolina: Miocene; Maryland, Virginia.

Carcharadon carcharias (Linn.).

Linnæus, 1758, Syst. Nat.. ed. x, p. 235. (Squalus carcharias.)

Agassiz, L. 1843 B, iii, p. 254, pl. xxx*a*, figs. 5–7. (C. sulcidens.)

Davis, J. W. 1890 A, p. 410, pl. xli, fig. 14. (C. rondeletii.)

Duméril, A. 1865 A, p. 411, pl. vii, fig. 7.

Emmons, E. 1858 B, p. 230, figs. 55, 56. (C. sulcidens.)

Gibbes, R. W. 1846 A, p. 42. (C. sulcidens.)
1848 A, p. 350. (C. sulcidens.)
1848 B, p. 147, pl. xxi, figs. 52, 53. (C. sulcidens.)

Giebel, C. G. 1848 A, p. 350. (C. sulcidens.)

Günther, A. 1880 A, p. 320, fig. 114. (C. rondeletii.)

Hasse, C. 1882 A, p. 228, pl. xxxi. (C. rondeletii.)

Jordan and Evermann 1896 A, p. 50. (C. carcharias.)

Kölliker, A. 1863 A, p. 15. (C. rondeletii.)

Müller and Henle, 1841 A, p. 70. (C. rondeletii.)

Stevenson, W. B. 1884 A, with 1 plate and 1 woodcut.

Woodward, A. S. 1884 A, p. 230. (C. sulcidens.)
1889 D, p. 420. (C. rondeletii.)

Recent in all temperate and tropical seas: Pliocene; Europe: Miocene and Eocene; South Carolina, North Carolina.

Carcharodon contortidens Emmons.

Emmons, E. 1858 B, p. 233, fig. 60.

Doubtful species.

Eocene: North Carolina.

Carcharodon lanciformis Gibbes.

Gibbes, R. W. 1847 A, p. 267.
1848 B, p. 146, pl. xxi, figs. 46–51.
1850 F.

Leidy, J. 1877 A, p. 254.

Woodward, A. S. 1889 D, p. 411.

Phosphate beds; South Carolina.

Carcharodon leptodon Agassiz.

Agassiz, L. 1843 B, iii, p. 259, pl. xxviii, figs. 1–6.

?Gibbes, R. W. 1846 A, p. 42.
?1850 G, p. 300, pl. xlii, figs. 7–9.

Woodward, A. S. 1889 D, p. 421.

Eocene; South Carolina.

The identification of the South Carolina specimens with Agassiz's *C. leptodon* is doubtful.

Carcharodon megalodon Agassiz.

Agassiz, L., in Charlesworth, E. 1837 A, with woodcut.
1843 B, iii, p. 247, pl. xxix (C. megalodon); p. 250, pl. xxx*a*, fig. 10 (C. rectidens); 251, pl. xxx*a*, figs. 11–13 (C. subauriculatus); p. 251, pl. xxx, figs. 2, 4, 6, 7, 8 (C. productus); p. 253, pl. xxx, figs. 9–12 (C. polygyrus).

Bowerbank, J. S. 1852 A. (Carcharias megalodon.)
1852 B.

Clark, W. B. 1895 A, p. 4. (C. polygyrus.)
1897 A, p. 61. (C. polygyrus.)

Cope, E. D. 1867 C, p. 142.
1875 H, p. 362.
1875 V, p. 29.

Davis, J. W. 1888 A, p. 12, pl. ii, figs. 1–3.

DeKay, J. E. 1842 B, p. 386. (Carcharias polygyrus)

Emmons, E. 1858 B, p. 227, figs. 50, 51; p. 229, figs. 52–54 (C. ferox); p. 232, fig. 59 (C. triangularis).

Gemmellaro, G. G. 1857 A, p. 299, pl. ii, figs. 3*a*–3*c*; pl. iii, figs. 1*a*, 2*a*, 3*a*; pl. iv, figs. 1*a*–3*a* (C. megalodon); p. 307, pl. iv, fig. 4 (C. latissimus); p. 306 pl. v, figs. 3–5 (C. productus).

Gibbes, R. W. 1846 A, p. 41 (C. megalodon, rectidens); p. 42 (C. polygyrus, productus, mortoni).
1847 A, p. 266. (C. mortoni.)
1848 B, p. 143, pls. xviii, xix, figs. 1–9 (C. megalodon); p. 146, pl. xxi, fig. 45 (C. mortoni).
1850 F.

Giebel, C. G. 1848 A, p. 348 (C. megalodon); p. 349 (C. productus, rectidens); p. 350 (C. auriculatus, polygyrus).

Hilgard, E. W. 1860 A, p. 142.

Leidy, J. 1876 A, p. 222.
1876 E.
1876 F.
1877 A, p. 253.

Lucas, F. A. 1892 A, p. 151.

Lyell, C. 1843 C, p. 32. (Carcharias.)
1845 A, p. 415. (C. megalodon, productus).

Morton, S. G. 1834 A, pl. xii, fig. 2. (Carcharias polygyrus, *fide* Agassiz.)
1835 A, p. 277. (Carcharias polygyrus.)
1842 A, p. 220. (Carcharias polygyrus).

Pedroni, P. M. 1844 A, p. 286, pl. i, figs. 24, 25.

Pictet, F. J. 1854 A, p. 238.

Probst, J. 1879 A, p. 138.

Quenstedt, F. A. 1852 A, p. 169. (Carcharias verus.)
1885 A, p. 206, fig. 82. (Carcharias verus.)

Sismonda, E. 1849 A, p. 34, pl. i, figs. 8–13 (C. megalodon); p. 35, pl. i, figs. 32, 33 (C. crassidens); p. 37, pl. i, figs. 25–29 (C. productus).

Tuomey, M. 1858 A, p. 268. (Carcharias polygyrus, productus.)

Wailes, B. L. C. 1854 A, p. 276.

Woodward, A. S. 1884 A, p. 229.
1889 D, p. 415 (C. megalodon); p. 422 (C. mortoni).
1900 A, p. 4, pl. i, fig. 9.

Zittel, K. A. 1890 A, p. 84, fig. 87.

Tertiary; Europe, Arabia, East Indies, West Indies, North and South America, Central America, Australia, New Zealand: Eocene and phosphate beds; South Carolina, Alabama, Mississippi, Maryland, Massachusetts, North Carolina, Virginia: Pliocene; Argentine Republic.

Carcharodon rectus Agassiz.

Agassiz, L. 1856 A, p. 274.
1857 A, p. 315, pl. i, figs. 39–41.

Bowers, S. 1889 A.

Woodward, A. S. 1889 D, p. 422.

Miocene; California.

CORAX Agassiz. Type *Galeus pristodontus* Agassiz.

Agassiz, L. 1843 B, iii, p. 224.
Davis, J. W. 1890 A, pp. 367, 411.
Kiprijanoff, V. 1853 A, p. 290.
Pictet, F. J. 1854 A, p. 240.
Pictet and Campiche 1858 A, p. 79.
Priem, F. 1897 A, p. 47.
Reuss, A. E. 1846 A, p. 3.
Williston, S. W. 1900 A, p. 41.
1900 B, p. 252.
Woodward, A. S. 1884 A, p. 227.
1889 D, p. 422.
Zittel, K. A. 1890 A, p. 84.

Corax affinis Agassiz.

Agassiz, L. 1843 B, iii, p. 227, pl. xxvi, fig. 2 (C. affinis); pl. xxvi*a*, figs. 21–24. (C. appendiculatus.)
1843 B, iii, p. 229, pl. xxvi*a*, figs. 51, 57. (C. planus.)
Giebel, C. G. 1848 A, p. 349. (Carcharodon minor.)
Hébert, E. 1855 C, p. 354, pl. xxvii, fig. 9. (Sphyrna plana.)
Woodward, A. S. 1889 D, pp. 427, 428.
Upper Cretaceous; Europe. A specimen in the Enniskillen collection from the Eocene of Alabama may belong to this species.

Corax curvatus Willist.

Williston, S. W. 1900 A, p. 41, pl. xii, figs. 7, 8.
1900 B, p. 253, pl. xxx, figs. 7, 8.
Cretaceous (Benton); Kansas.

Corax falcatus Agassiz.

Agassiz, L. 1843 B, iii, p. 226, pl. xxvi, fig. 14; pl. xxvi*a*, figs. 1–15. (On pl. xxvi as Galeus pristodontus.)
Cope, E. D. 1875 E, p. 295. (Galeocerdo.)
Credner, H. 1870 A, p. 242. (Heterodon.)
Dana, J. D. 1896 A, p. 843, fig. 1403. (C. heterodon.)
Dixon, F. 1850 A, pl. xxx, fig. 18.
Fritsch, A. 1878 A, p. 11, figs. 23, 24. (C. heterodon.)
Geinitz, H. B. 1839 A, p. 11, pl. i, fig. 1 (Galeus pristodontus); p. 11, pl. i, fig. 2. (G. appendiculatus.)
1875 A, p. 210, pl. xl, figs. 2–15. (C. heterodon.)
Giebel, C. G. 1848 A, p. 370. (C. heterodon.)
Hébert, E. 1855 C, p. 354, pl. xxvii, fig. 9. (Sphyrna plana.)
Kiprijanoff, V. 1853 A, p. 293, pl. ii, figs. 1*a*–1*e*. (C. heterodon.)
1854 A, p. 293, pl. ii. (C. heterodon.)
Leidy, J. 1873 B, pp. 301, 351, pl. xviii, figs. 29–43.
Pictet and Campiche 1858 A, p. 80, pl. x, figs 1, 2.
Osborn, Scott and Speir 1878 A, p. 105. (Galeocerdo.)
Reuss, A. E. 1846 A, p. 3, pl. iii, figs. 49–71 (C. heterodon); p. 4, pl. iv, fig. 1–3 (C. obliquus).
Roemer, F. 1849 A, p. 419. (C. heterodon.)
1852 A, p. 30, pl. i, fig. 8. (C. heterodon.)
Sauvage, H. E. 1870 A, p. 40, pl. ii, figs. 84, 85.
Tuomey, M. 1858 A, p. 261.
Williston, S. W., 1900 A, p. 41, pl. xiii, figs. 1–40, pl. xiv, figs. 1–11.
1900 B, p. 252, pl. xxxi, figs. 1–40; pl. xxxii, figs. 1–11.
Woodward, A. S. 1884 A, p. 227, fig. 134.
1889 D, p. 424.
Cretaceous; Europe, Alabama, Mississippi, Texas, Kansas, Colorado, New Jersey.

Corax pristodontus Agassiz.

Agassiz, L. 1843 B, iii, p. 224, pl. xxvi, figs. 9–13. (On plate as Galeus pristodontus.)
In Morton, S. G. 1835 A, p. 277. (Galeus pristodontus; no description.)
1843 B, iii, p. 225, pl. xxvi, figs. 4–8; pl. xxvi *a*, figs. 25–34. (C. kaupii.)
Cope, E. D. 1867 C, p. 141. (Galeocerdo appendiculatus; reference uncertain as to species.)
1875 E, p. 295. (Galeocerdo.)
1877 K, pp. 11, 38. (Galeocerdo.)
De Kay, J. E. 1842 B, p. 387. (Galeus.)
Emmons, E. 1858 B, p. 238, fig. 69. (Galeocerdo.)
Gibbes, R. W. 1846 A, p. 42.
1849 A, p. 192, pl. xxv, fig. 70. (Galeocerdo.)
1850 F. (Galeocerdo.)
Giebel, C. G. 1848 A, p. 370.
Harlan, R. 1835 B, p. 292. (Squalus.)
Hébert, E. 1855 C, p. 353, pl. xxvii, fig. 8.
Morton, S. G. 1834 A, pl. xi, fig. 6. (No description.)
1842 A, p. 219. (Galeus.)
Pictet, F. J. 1854 A, p. 240.
Priem, F. 1897 A, p. 45, pl. i, figs. 18, 19.
1898 A, p. 236, pl. ii, fig. 5.
Spillman, W., in Hilgard, E. W. 1860 A, p. 389. (C. appendiculatus.)
Tuomey, M. 1858 A, p. 261. (Galeus.)
Woodward, A. S. 1884 A, p. 227, fig. 132.
1888 I, p. 293.
1889 D, p. 423.
Zittel, K. A. 1890 A, p. 84, fig. 88.
Upper Cretaceous; Europe, India, Africa, New Jersey: Eocene; Alabama, Mississippi, South Carolina: Miocene; Virginia.

XENODOLAMIA Leidy. Type *X. pravus* Leidy.

Leidy, J. 1877 A, p. 251.
Woodward, A. S. 1889 D, p. 429.

Xenodolamia pravus Leidy.

Leidy, J. 1877 A, p. 251, pl. xxxiv, figs. 33, 34.
Woodward, A. S. 1889 D, p. 429.
Phosphate beds; South Carolina.

Xenodolamia simplex Leidy.

Leidy, J. 1877 A, p. 251, pl. xxxiv, figs. 35, 36.
Woodward, A. S. 1889 D, p. 429.
Phosphate beds; South Carolina.

SCYLLIORHINIDÆ.

Gill, T. 1862 A, p. 406. (Scylliorhinoidæ.)
Duméril, A. 1865 A, p. 312. (Scyllia.)
Gegenbaur, C. 1865 B. (Scylliidæ.)
Günther, A. 1870 A, p. 400. (Scylliidæ.)
1880 A, p. 325. (Scylliidæ.)
Hasse, C. 1878 A. (Scyllia.)
1879 A, p. 52. (Scyllia.)
1882 A, p. 242. (Scyllia.)
Haswell, W. A. 1884 A, p. 115. (Scylliidæ.)
Jaekel, O. 1890 A, p. 94. (Scylliidæ.)
1894 A, p. 159. (Scylliidæ.)
Jordan and Evermann 1896 A, p. 22 (Scylliorhinidæ); p. 25 (Ginglymostomidæ).
Kölliker, A. 1863 A, p. 27. (Scyllium.)
Mayer, P. 1886 A, p. 274. (Scylliidæ.)
Müller and Henle 1841 A, p. 3. (Scyllia.)
Probst, J. 1879 A, p. 169. (Scylliidæ.)
Woodward, A. S. 1889 D, p. 338.
Zittel, K. A. 1890 A (1887), p. 79. (Scylliidæ.)

SCYLLIORHININÆ.

Gill, T. 1862 A, p. 407.

SCYLLIORHINUS Blainville. Type *S. canicula* Cuvier.

Blainville, H. M. D., 1816, Jour. de Physique, p. 263.
Cuvier, 1817, Règne Anim., ii, p. 124. (Scyllium).
Günther, A. 1870 A, p. 400. (Scyllium.)
Jordan and Evermann 1896 A, p. 22.
Woodward, A. S. 1889 D, p. 340. (Scyllium.)

Scylliorhinus? gracilis Willist.

Williston, S. W. 1900 A, p. 35, pl. vi, fig. 6. [Scyllium (Lamna?).]
1900 B, p. 245, pl. xxiv, fig. 6. [(Scyl. Lamna)].
Cretaceous (Greenleaf sandstone); Kansas.

Scylliorhinus planidens Willist.

Williston, S. W. 1900 A, p. 35, pl. vi, fig. 7. (Scyllium.)
1900 B, p. 245, pl. xxiv, fig. 7.
Cretaceous (Greenleaf sandstone); Kansas.

Scylliorhinus rugosus Willist.

Williston, S. W. 1900 A, p. 35, pl. vi, fig. 5. (Scyllium.)
1900 B, p. 245, pl. xxiv, fig. 5.
Cretaceous (Greenleaf sandstone); Kansas.

GINGLYMOSTOMINÆ.

Gill, T. 1890 A, p. 130. (Ginglymostominæ.)
1862 A, p. 406. (Ginglymostomoidæ.)
Günther, A. 1870 A, p. 407. (Scylliidæ, in part.)
Hasse, C. 1879 A, p. 51. (Scylliolamnidæ, in part.)
1882 A, p. 193. (Scylliolamnidæ, in part.)
Jordan and Evermann, 1896 A, p. 25. (Ginglymostomidæ.)

GINGLYMOSTOMA Müller and Henle. Type *Squalus cirratus* Gmelin.

Müller and Henle, 1837 B, p. 396.
Duméril, A. 1865 A, p. 333.
Günther, A. 1870 A, p. 407.
1880 A, p. 326.
Hasse, C. 1879 A, p. 71.
1882 A, pp. 201, 203, pl. xxv.
Klunzinger, C. B. 1871 A, p. 670.
Kölliker, A. 1863 A, p. 5, fig. 1.
Leidy J. 1877 A, p. 250. (Acrodobatis, type *A. serra.*)
Müller and Henle, 1838 A, p. 35.
1841 A, p. 22.
Woodward, A. S. 1889 D, p. 348.
Zittel, K. A. 1890 A, p. 80.

Ginglymostoma obliquum (Leidy).

Leidy, J. 1877 A, p. 250, pl. xxxiv, fig. 14. (Acrodobatis.)
Woodward, A. S. 1889 D, p. 348. (G. serra?)
Eocene; New Jersey.

Ginglymostoma serra (Leidy).

Leidy, J. 1877 A, p. 250, pl. xxxiv, figs. 10-13. (Acrodobatis.)
Woodward, A. S. 1889 D, p. 348.
Eocene; South Carolina.

GALEIDÆ.

Duméril, A. 1865 A, p. 388. (Galei.)
Gegenbaur, C. 1865 B. (Carchariidæ.)
Gill, T. 1862 A, p. 399. (Galeorhinoidæ.)
Günther, A. 1870 A, p. 358. (Carchariidæ.)
1880 A, p. 316. (Carchariidæ.)
1881 A, p. 685. (Carchariidæ.)
Hasse, C. 1882 A, p. 256 ("Fam. Hemigaleus"); p. 268 (Carchariidæ).
Jaekel, O. 1894 A, p. 156. (Carchariidæ.)
Jordan and Evermann 1896 A, p. 27. (Galeidæ.)
Mayer, P. 1886 A, p. 275. (Carchariidæ.)
Müller and Henle 1841 A, p. 7 (Carchariæ); p. 57 (Galei).
Steinmann and Döderlein 1890 A, p. 546. (Carchariidæ.)
Woodward, A. S. 1884 A, p. 227 (Carchariidæ); 1889 D, p. 435 (Carchariidæ).
Zittel, K. A. 1890 A, p. 85. (Carchariidæ.)

GALEORHININÆ.

Gill, T. 1862 A, pp. 399, 401.
Günther, A, 1870 A, p. 358. (Carcharlina, in part.)
Jordan and Evermann 1896 A, p. 27.

GALEOCERDO Müller and Henle. Type *G. tigrinus* M. and H.

Müller and Henle 1838 A, p. 36.
Agassiz, L. 1843 B, iii. pp. 230, 304.
Davis, J. W. 1888 A, p. 7.
Duméril, A. 1865 A, p. 393.
Gibbes, R. W. 1849 A, p. 191.
Gill, T. 1862 A, p. 400.
Günther, A. 1870 A, p. 377.
1880 A, p. 317.
Hasse, C. 1882 A, p. 259, pls. xxxvi, xxxvii.
Jaekel, O. 1894 A, p. 164.
Jordan and Evermann 1896 A, p. 32.
Klunzinger, C. B. 1871 A, p. 663.
Müller and Henle 1837 A, p. 114.
1841 A, p. 59.
Pedroni, P. M. 1844 A, p. 282.
Pictet, F. J. 1854 A, p. 241.
Steinmann and Döderlein 1890 A, p. 548.
Woodward, A. S. 1884 A, p. 227.
1889 D, p. 443.
Zittel, K. A. 1890 A, p. 85.

Galeocerdo aduncus Agassiz.

Agassiz, L. 1843 B, iii, p. 231, pl. xxvi, figs. 24–28.
Cope, E. D. 1867 C, p. 141.
1875 H, p. 362.
1875 V, p. 29.
1877 K, p. 38.
Emmons, E. 1858 B, p. 237.
Gibbes, R. W. 1849 A, p. 191, pl. xxv, figs. 54–58.
1850 F.
Giebel, C. G. 1848 A, p. 369.
Leidy, J. 1877 A, p. 254.
Pedroni, P. M. 1844 A, p. 283, pl. i, figs. 12, 13.
Pictet, F. J. 1854 A, pp. 241, 242.
Quenstedt, F. A. 1852 A, p. 168, pl. xiii, fig. 2 (Galeus).
1885 A, p. 264, pl. xx, fig. 8 (Galeus).
Tuomey, M. 1858 A, p. 268 (Galeus).
Woodward, A. S. 1889 D, p. 444.
1900 A, p. 5, pl. i, figs. 10, 10*a*.
Zittel, K. A. 1890 A, p. 85, fig. 90.
Tertiary; Europe: Eocene; North Carolina, South Carolina, Alabama: Miocene; Maryland.

Galeocerdo contortus Gibbes.

Gibbes, R. W. 1849 A, p. 193, pl. xxv, fig. 71–74.
Clark, W. B. 1895 A, p. 4.
1897 A, p. 62.
Cope, E. D. 1867 C, p. 141.
1875 V, p. 29.
Emmons, E. 1858 B, additions and corrections to p. 241, figs. 82*a*, 83*a*.
Gibbes. R. W. 1850 F
Jaekel, O. 1898 C, p. 165 (var. hassiæ).
Leidy, J. 1877 A, p. 254.
Pictet, F. J. 1854 A, p. 242.
Woodward, A. S. 1889 D, p. 443.
Wyman, J. 1850 B, p. 234.
Eocene; North Carolina, South Carolina, Alabama: Miocene; Virginia and Maryland. Variety *hassiæ* in Germany.

Galeocerdo crassidens Cope.

Cope, E. D. 1872 I, p. 355.
1875 E, pp. 243, 295.
Williston, S. W. 1900 A, p. 41. (Syn. ? of Corax falcatus.)
Woodward, A. S. 1889 D, p. 447.
Cretaceous (Niobrara); Kansas.

Galeocerdo hartwellii Cope.

Cope, E. D. 1872 I, p. 355.
1875 E, pp. 244, 295. (G. hartvellii.)
Osborn, Scott and Speir, 1878 A, p. 105.
Williston, S. W. 1900 A, p. 41. (Syn. ? of Corax falcatus.)
1900 B, p. 252, pl. xxxi, fig. 23. (Corax hartvellii; syn. of C. falcatus.)
Woodward, A. S. 1889 D, p. 447.
Cretaceous (Niobrara); Kansas, Colorado.

Galeocerdo lævissimus Cope.

Cope, E. D. 1867 C, p. 141.
Miocene; Maryland.

Galeocerdo latidens Agassiz.

Agassiz, L. 1843 B, iii, p. 231, pl. xxvi, figs. 22, 23; (? figs. 20, 21.)
Cope, E. D. 1867 C, p. 141.
1875 V. p. 29.
Dames, W., 1883 B, p. 142.
Dixon, F. 1850 A, p. 202, pl. xi, figs 22, 23.
1878 A, p. 248, pl. xi, figs. 22, 23.
? Emmons, E. 1858 B, p. 239, fig. 68.
Gibbes, R. W. 1846 A, p. 42.
1849 A, p. 192, pl. xxv, figs. 59–62.
1850 F.
Giebel, C. G. 1848 A, p. 369.
Hilgard, E. W. 1860 A, p. 142.
Tuomey, M. 1858 A, p. 268. (Galeus.)
Woodward, A. S. 1889 D, p. 444
Tertiary; Europe and North Africa: Eocene; North Carolina, South Carolina, Alabama, and Mississippi: Miocene; Maryland.

Galeocerdo minor Agassiz.

Agassiz, L. 1843 B. iii, p. 232, pl. xxvi, figs. 15–19 (? figs. 20, 21); pl. xxvi*a*, figs. 64–66.
Giebel, C. G. 1848 A. p. 369.
Molin, R. 1860, Sitzungsber. Akad. Wiss. Berlin, xl, p. 583. (Protogaleus.)
Winckler, 1874 B, p. 296, pl. vii, fig. 1. (G. recticonus.)
Woodward, A. S 1889 D, p. 446. (Galeocerdo? minor.)
Tertiary; Europe: Eocene; Alabama. (Woodward.)

Galeocerdo productus Agassiz.

Agassiz, L. 1856 A, p. 273.
1857 A, p. 314, pl. i, figs. 1-6.
Woodward, A. S. 1889 D, p. 448.
Miocene; California.

Galeocerdo subcrenatus Emmons.

Emmons, E. 1858 B, p. 238.
A doubtful species, without indicated formation; North Carolina.

Galeocerdo sp. indet.

Woodward, A. S. 1889 D, p. 456.
Eocene; South Carolina.

GALEORHINUS Blainville. Type *Squalus galeus* Linn.

Blainville, H. M. D. 1816, Bull. Sci. Philom., p. 121.
Cuvier G. 1817 Règne Anim., ed. i, p. 117. (Galeus, with *Squalus galeus* as type.)
Gegenbaur, C. 1872 A, pl. ii, fig. 2; pl. v, fig. 2; pl. viii, fig. 3; pl. xii, fig. 2; pl. xvii, fig. 2; pl. xix. fig. 4. (Galeus.)
Gill, T. 1862 A, p. 402.
1864, Proc. Acad. Nat. Sci. Phila., p. 148. (Eugaleus, type *Squaleus galeus*.)
Günther, A. 1870 A, p. 379. (Galeus.)
1880 A, p. 318. (Galeus.)
Hasse, C. 1882 A, p. 263, pl. xxxviii. (Galeus.)
Jaekel, O. 1894 A, p. 166. (Galeus.)
Jordan and Evermann, 1896 A, p. 31. (Galeorhinus.)
Müller and Henle, 1841 A, p. 57. (Galeus.)
Woodward, A. S. 1889 D, p. 452. (Galeus.)
Zittel, K. A. 1890 A, p. 85. (Galeus.)

Galeorhinus sp. indet.

Woodward A. S. 1889 D, p. 456. (Galeus.)
Eocene; Alabama.

CARCHARHININÆ.

Duméril, A. 1865 A, p. 340. (Carchariæ.)
Günther, A. 1870 A. p. 353. (Carchariina, in part.)
Jordan and Evermann, 1896 A, p. 28.

CARCHARHINUS Blainville. Type *C. commersoni*=*C. lamia* (Raf.).

Blainville, H. M. D. 1816, Jour. de Physique, p. 284.
Agassiz, L. 1843 B, iii, pp. 240, 302, 366. (Carcharias.)
Cuvier, G. 1817 Règne Anim., ed. i, p. 125. (Carcharias, type *C. lamia*.)
Duméril, A. 1865 A, p. 343. (Carcharias.)
Gill, T. 1862 A, p. 401. (Eulamia, type *C. lamia*.)
Günther, A. 1880 A, p. 318. (Carcharias.)
Hasse, C. 1882 A, p. 268, pl. xxxix. (Carcharias.)
Jaekel, O. 1894 A, p. 157. (Carcharias.)
Jordan and Evermann 1896 A, p. 33. (Carcharhinus.)
Klunzinger, C. B. 1871 A, p. 655. (Carcharias.)
Müller and Henle 1837 A, p. 114. (Carcharias.)
1841 A, p. 27. (Carcharias.)
Quenstedt, F. A. 1852 A, p. 169. (Carcharias.)
1885 A, pp. 265, 272. (Carcharias.)
Steinmann and Döderlein 1890 A, p. 548. (Carcharias.)
Woodward, A. S. 1889 D, p. 435. (Carcharias.)
Zittel, K. A. 1890 A, (1887) p. 86. (Carcharias.)
Subgenus APRIONODON Gill.
Gill, T. 1862 A, p. 411. (For Aprion of Müller and Henle, preoccupied).
Duméril, A, 1865 A, p. 348.
Günther A. 1870 A, p. 361. (Aprion.)
Jaekel, O. 1894 A, p. 162. (Aprion.)
Jordan and Evermann 1896 A, p. 42.
Müller and Henle 1841 A, p. 31. (Aprion.)
Probst, J. 1878 A, p. 121. (Aprion.)
Woodward, A. S. 1889 D, p. 437.
Zittel, K. A. 1890 A, p. 86.
Subgenus PRIONACE Cantor.
Cantor, T. E. 1850 Malayan Fishes, p. 399. (For Prionodon of Müller and Henle, preoccupied.)
Agassiz, L. 1843 B, iii, p. 243. (Glyphis.)
Duméril, A. 1865 A, p. 351. (Prionodon.)
Gegenbaur, C. 1872 A, pl. ii, fig. 4; pl. v, fig. 3; pl. viii, fig. 4; pl. xviii, fig. 5. (Prionodon.)
Gibbes, R. W. 1849 A, p. 194. (Glyphis.)
Günther, A, 1870 A, p. 363. (Prionodon.)
Hasse, C. 1882 A, p. 271, pl. xxxix. (Prionodon.)
Jaekel, O. 1894 A, p. 162. (Prionodon.)
Jordan and Evermann 1896 A, p. 33.
Müller and Henle 1841 A, p. 35. (Prionodon.)
Pictet, F. J. 1854 A, p. 236. (Glyphis.)
Probst, J. 1878 A, p. 124. (Prionodon.)
Woodward, A. S. 1889 D, p. 439. (Prionodon.)
Zittel, K. A. 1890 A, p. 86. (Prionodon.)

Carcharhinus (Prionace) antiquus (Agassiz).

Agassiz, L. 1856 A, p. 273. [Carcharias (Prionodon).]
1857 A, p. 314, pl. i, figs. 15, 16. [Carcharias (Prionodon).]
Woodward, A. S. 1889 D, p. 441. [Carcharias (Prionodon).]
Miocene; California

Carcharhinus (Prionace) egertoni (Agassiz).

Agassiz, L. 1843 B, iii, p. 228, pl. xxxvi, figs. 6, 7. (Corax egertoni.)

Cope, E. D. 1867 C, p. 141. (Galeocerdo.)
1875 F, p. 63. (Galeocerdo.)
1875 H, p. 362. (Galeocerdo.)
1875 V, p. 29. (Galeocerdo.)

Emmons, E. 1858 B, additions and corrections to p. 242, fig. 90. (Galeocerdo.)

Gibbes, R. W. 1847 A, p. 268. (Glyphis subulata.)
1849 A, p. 192, pl. xxv, figs. 66–69 (Galeocerdo egertoni); p. 194, pl. xxv, figs. 86, 87 (Glyphis subulata).
1850 F. (Glyphis subulata.)

Giebel, C. G. 1848 A, p. 371. (Carcharias.)

Woodward, A. S. 1889 D, p. 439. [Carcharias (Prionodon).]

Wyman, J. 1850 B, p. 234. (Galeocerdo egertoni, Glyphis subulata.)

Eocene; South Carolina: Miocene; Maryland, North Carolina.

Carcharhinus (Aprionodon) gibbesii (Woodward).

Woodward, A. S. 1889 D, p. 437. [Carcharias (Aprionodon).]

?Cope, E. D. 1867 C, p. 142. (Oxyrhina minuta.)

Eastman, C. R. 1895 A, p. 182. (Carcharias.)

Gibbes, R. W. 1846 A, p. 42. (Galeocerdo minor, not of Agassiz.)
1849 A, p. 192, pl. xxv, figs. 63–65 (G. minor); ? p. 202, pl. xxvii, fig. 164 (Oxyrhina minuta).
1850 F. (G. minor.)

Leidy, J. 1877 A, p. 254. (Prionodon antiquus.)

Eocene; South Carolina, Alabama: Miocene; Maryland.?

Carcharhinus (Prionace) tenuis (Agassiz).

Agassiz, L. 1843 B, iii, p. 242, pl. xxx*a*, fig. 15. (Carcharias.)

?Gibbes, R. W. 1849 A, p. 191. (Carcharias.)
?1850 G, p. 300, pl. xlii, fig. 8. (Carcharias.)

Woodward, A. S. 1889 D p. 442. [Carcharias (Prionodon).]

Senonian; Switzerland: Eocene?; South Carolina.

Carcharhinus sp. indet.

Woodward, A. S. 1889 D, pp. 455, 456.

Eocene; Alabama.

MICRODUS Emmons. Type *M. lævis* Emmons.

Emmons, E. 1857 A, p. 48.

It is doubtful what disposition is to be made of the tooth described by Emmons under the name *Microdus lævis*.

Microdus lævis Emmons.

Emmons, E. 1857 A, p. 48 with figure.

Triassic; North Carolina.

HEMIPRISTIS Agassiz. Type *H. serra* Agassiz.

Agassiz, L. 1843 B, iii, pp. 237, 303.

Gibbes, R. W. 1849 A, p. 193.

Jaekel, O. 1894 A, p. 168.

Kiprijanoff, V. 1854 A, p. 373.

Klunzinger, C. B. 1871 A, p. 664. (Dirrhizodon, type *D. elongatus*.)

Pedroni, P. M. 1844 A, p. 284.

Pictet, F. J. 1854 A, p. 242.

Probst, J. 1878 A, p. 141.

Quenstedt, F. A. 1852 A, p. 168.
1885 A, p. 265.

Sismonda, E. 1849 A, p. 32.

Woodward, A. S. 1889 D, p. 448.

Zittel, K. A. 1890 A, p. 85.

Hemipristis heteropleurus Agassiz.

Agassiz, L. 1856 A, p. 274.
1857 A, p. 315, pl. i, fig. 14.

Miocene; California.

Hemipristis serra Agassiz.

Agassiz, L. 1843 B, iii, p. 237, pl. xxvii, figs. 18–30.
1843 B, iii, p. 238, pl. xxvii, figs. 31–33. (H. paucidens.)

Cope, E. D. 1867 C, p. 142.
1875 H, p. 362.
1875 V, p. 29.

Emmons, E. 1858 B, p. 235, fig. 63. (H. crenulatus.)

Gemmellaro, G. G. 1857 A, p. 296, pl. i, fig. 6*a*.

Gibbes, R. W. 1846 A, p. 42. (H. serra, H. paucidens, Lamna hopei.)
1849 A, p. 193, pl. xxv, figs. 75–85 (H. serra); p. 198, pl. xxvi, figs. 120–123 (Lamna hopei.)
1850 F. (H. serra, Lamna hopei.)

Giebel, C. G. 1848 A, p. 368. (H. serra, H. paucidens.)

Leidy, J. 1877 A, p. 254.

Pedroni, P. M. 1844 A, p. 284, pl. i, fig. 20 (H. serra); figs. 21, 22 (H. paucidens).

Pictet, F. J. 1854 A, p. 243.

Probst, J. 1878 A, p. 143, pl. i, figs. 49–57.

Quenstedt, F. A. 1885 A, p. 265, fig. 81.

Sauvage, H. E. 1875 A, p. 634, pl. xxii, fig. 2. (Odontaspis sacheri.)

Sismonda, E. 1849 A, p. 33, pl. i, figs. 17, 18.

Woodward, A. S. 1884 A, p. 228, fig. 133.
1889 D, p. 449.
1900 A, p. 5, pl. i, figs. 11, 11*a*.

Wyman, J. 1850 B, p. 234.

Zittel, K. A. 1890 (1887) A, p. 85, fig. 89.

For additional bibliography see Woodward, A. S. 1889 D, p. 449.

Tertiary; Europe: Eocene; North Carolina, South Carolina: Miocene; Virginia: Pliocene?; Argentine Republic.

Hempristis sp. indet.

Woodward, A. S. 1889 D, p. 456.

Eocene; South Carolina.

SPHYRNINÆ.

Duméril, A. 1865 A, p. 380. (Cestraciontes.)
Günther, A. 1870 A, p. 353. (Zygænina.)
Jordan and Evermann 1896 A, p. 43. (Sphyrnidæ.)

Sphyrna Rafinesque. Type *Squalus zygæna* Linn.

Rafinesque, C. S., 1810, Caratteri di alcuni generi, etc., p. 12.
Agassiz, L. 1843 B, iii, pp. 234, 303, 366, pl. N, figs. 8-10.
Duméril, A. 1865 A, p. 381. (Cestracion.)
Gegenbaur, C. 1872 A. (Zygæna.)
Gibbes, R. W. 1849 A, p. 194.
Günther, A. 1870 A, p. 380. (Zygæna.)
1880 A, p. 318. (Zygæna.)
Hasse, C. 1882 A, p. 273. (Zygæna.)
Hubrecht, A. A. W. 1878 A. (Zygæna.)
Jaekel, O. 1894 A, p. 165. (Zygæna.)
Jordan and Evermann 1896 A, p. 43.
Klunzinger, C. B. 1871 A, p. 665. (Zygæna.)
Mivart, St. G. 1879 A. (Zygæna.)
Müller and Henle 1841 A, p. 51.
Woodward, A. S. 1889 D, p. 453.
Zittel, K. A. 1890 A, p. 86.

Sphyrna gibbesii, nom. nov.

Emmons, E. 1858 B, additions and corrections to p. 241, fig. 84*a*. (S. denticulata.)
Gibbes, R. W. 1849 A, p. 196, pl. xxv, fig. 94. (S. denticulata, not of Agassiz.)
1850 F. (S. denticulata.)
Eocene; South Carolina, North Carolina.

Sphyrna lata Agassiz.

Agassiz, L. 1843 B, iii, p. 235, pl. xxvi*a*, figs. 58, 59.
?Gibbes, R. W. 1849 A, p. 195, pl. xxv, figs. 91-93.
1850 F.
Woodward, A. S. 1889 D, p. 454.
?Wyman, J. 1850 B, p. 234.
Tertiary; Virginia: Eocene; South Carolina. The identification of the American specimens with Agassiz's species is doubtful.

Sphyrna magna Cope.

Cope, E. D. 1867 C, p. 142.
Woodward, A. S. 1889 D, p. 455.
Miocene; Virginia.

Sphyrna prisca Agassiz.

Agassiz, L. 1843 B, iii, p. 234, pl. xxvi *a*, figs. 35-50.
Cope, E. D. 1867 C, p. 142.
1875 H, p. 362. (Zygæna.)
1875 V, p. 29. (Zygæna.)
Gemmellaro, G. G. 1857 A, p. 295, pl. i, fig. 5; pl. vi, fig. 3.
Gibbes, R. W. 1889 A, p. 194, pl. xxv, figs. 88-90.
Pedroni, P. M. 1844 A, p. 284, pl. i, figs. 15, 16.
Woodward, A. S. 1889 D, p. 453.
Zittel, K. A. 1890 A, p. 86, fig. 93. (S. serrata.)
Miocene; Europe, Maryland, New Jersey, North Carolina, South Carolina.

Superfamily SQUALOIDEA.

Gill, T. 1893 A, p. 129. (Tectospondyli, *lapsu calami*.)
Hasse, C. 1879 A, p. 41. (Cyclospondyli.)
1882 A, pp. 55-94, pls. viii-x.
Jaekel, O. 1894 A, p. 51. (Cyclospondyli.)
Jordan and Evermann 1896 A, p. 53. (Cyclospondyli.)
Woodward, A. S. 1889 D, p. xxvii. (Cyclospondyli.)

SOMNIOSIDÆ.

Gill, T. 1895 A, p. 192.
Duméril, A. 1865 A, p. 450. (Scymni.)
Gill, T. 1862 A, p. 405. (Scymnoidæ, Echinorhinoidæ.)
1893 A, p. 129. (Dalatiidæ and Echinorhinidæ.)
Günther, A. 1870 A, p. 417. (Spinacidæ, in part.)
Hasse, C. 1879 A, p. 43. (Scymnidæ.)
Jordan and Evermann 1896 A, p. 56 (Dalatiidæ); p. 57 (Echinorhinidæ).
Müller and Henle 1841 A, p. 91. (Scymni.)
Woodward, A. S. 1889 D, p. 30. (Spinacidæ, in part.)
Zittel, K. A. 1890 A, p. 87. (Spinacidæ, in part.)

Scymnorhinus Bonaparte. Type *Scymnus lichia* Cuvier.

Bonaparte, C. S. 1846, Cat. Met. Pesci Europei, p. 16.
Agassiz, L. 1843 B, iii, pp. 305, 367. (Scymnus.)
Cuvier, G. 1817, Règne Anim., ii, p. 130. (Scymnus, preoccupied.)
Duméril, A. 1865 A, p. 450.
Gegenbaur, C. 1872 A, pl. i, fig. 3; pl. iv, fig. 3; pl. vii, fig. 3; pl. xi, fig. 1; pl. xvii, fig. 4; pl. xix, fig. 2. (Scymnus.)
Gill, T. 1895 A.
Hasse, C. 1878 A, p. 168. (Scymnus.)
1882 A, p. 65, pl. ix. (Scymnus.)
Hubrecht, A. A. W. 1878 A. (Scymnus.)
Kölliker, A. 1863 A, p. 26. (Scymnus.)
Müller and Henle 1837 A, p. 116. (Scymnus.)
1837 B, p. 399. (Scymnus.)
1838 A, p. 89. (Scymnus.)
1841 A, p. 91. (Scymnus.)
Woodward, A. S. 1889 D, p. 33. (Scymnus.)
Zittel, K. A. 1890 A, p. 88. (Scymnus.)

Scymnorhinus occidentalis (Agassiz).

Agassiz, L. 1856 A, p. 272. (Scymnus.)
1857 A, p. 314, pl. i, figs. 9-13. (Scymnus.)
Woodward, A. S. 1889 D, p. 458. (Scymnus.)
Miocene; California.

ECHINORHINUS Blainville. Type *Squalus spinosus* Gmelin.

Blainville, H. M. D., 1816, Bull. Soc. Philom., p. 121.
Agassiz, L. 1843 B (1838), iii, p. 94. (Goniodus.)
Duméril, A. 1865 A, p. 458.
Günther, A. 1870 A, p. 428.
Hasse, C. 1882 A, p. 73, pl. ix.
Jordan and Evermann 1896 A, p. 57.
Müller and Henle 1838 A, p. 89.
Müller and Henle 1841 A, p. 96.
Woodward, A. S. 1889 D, p. 34.

Echinorhinus blakei Agassiz.

Agassiz, L. 1856 A, p. 272.
1857 A, p. 313, pl. i, figs. 7, 8, 17.
Miocene of California.

Suborder RAJÆ.

Brühl, B. C. 1847 A.
Duméril, A. 1865 A, p. 468. ("Raies ou Hypotrèmes.")
Gegenbaur, C. 1872 A.
Gill, T. 1893 A, p. 130. (Hypotremi.)
Günther, A. 1870 A, p. 434. (Batoidei.)
1880 A, p. 335. (Batoidei.)
Haeckel, E. 1895 A, p. 236. (Rajacei.)
Hasse, C. 1879 A, p. 44. (Tectospondyli.)
1882 A, p. 163. (Tectospondyli.)
Haswell, W. A. 1884 A, p. 115. (Batoidei.)
Jaekel, O. 1890 C.
1890 D, p. 110. (Tectospondyli.)
1892 A.
Jaekel, O. 1894 A, p. 40. (Batoidei.)
1898 A, p. 44. ("Rochen.")
Jordan and Evermann 1896 A, p. 59. (Batoidei.)
Kehner, F. A. 1876 A. (Raii.)
Köstlin, O. 1844 A, p. 425. ("Rochen.")
Müller, J 1846 C, p. 203. (Rajidæ.)
Müller and Henle 1841 A, p. 103.
Parker, W. K. 1878 A. (Raii.)
Steinmann and Döderlein 1890 A, p. 549. (Batoidei.)
Woodward, A. S. 1889 D, p. 30. (Tectospondyli, in part.)
Zittel, K. A. 1890 A, p. 93. (Batoidei.)

Superfamily PACHYURA Gill.

Gill, T. 1872 C, p. 23.
1882, in Jordan and Gilbert's Synop. N. A. Fishes, p. 36.
1893 A, p. 130. (Sarcura.)
Jaekel, O. 1894 A, p. 69. (Rhinoraji.)
1898 A, p. 45. (Rhinoraji.)
Jordan and Evermann 1896 A, p. 59. (Sarcura.)

TAMIOBATIDÆ, nom. nov.

TAMIOBATIS Eastman. Type *T. vetustus* Eastman.

Eastman, C. R. 1897 A, p. 85.
Miller, S. A. 1897 A, p. 793.
Relationships to the Rhinobatidæ doubtful.

Tamiobatis vetustus Eastman.

Eastman, C. R. 1897 A, p. 85, pl. i.
Devonian?; Kentucky.

RAJIDÆ.

Agassiz, L. 1843 B, iii, p. 73. ("Raies.")
Duméril, A. 1865 A, p. 525. (Rajæ.)
Günther, A. 1870 A, pp. 435, 455.
1880 A, p. 340.
1881 A, p. 686.
Hasse, C. 1878 A, p. 170.
1879 A, p. 48. (Rajæ.)
1882 A, p. 163. (Rajæ.)
Haswell, W. A. 1884 A, p. 117.
Howes, G. B. 1890 A.
Hubrecht, A. A. W. 1878 A.
Kölliker, A. 1860 B, p. 212.
Jaekel, O. 1890 A, p. 94.
Jaekel, O. 1891 D, p. 191.
1894 A, p. 81.
1898 A, p. 52.
Jordan and Evermann 1896 A, p. 66.
Müller and Henle 1841 A, p. 132. (Rajæ.)
Nicholson and Lydekker 1889 A, p. 933.
Owen, R. 1845 B, p. 43.
Stannius, H. 1854 A.
Steinmann and Döderlein 1890 A, p. 550.
Stephan, P. 1900 A.
Woodward, A. S. 1889 D, p. 84.
Zittel, K. A. 1890 A, p. 103.

RAJA Linn. Type *R. batis* Linn.

Linnæus, C., 1858. Syst. Nat., ed. x, p. 231.
Duméril, A. 1865 A, p. 526.
Gegenbaur, C. 1872 A, pl. iii, fig. 2; pl. vi, fig. 4; pl. xiii, fig. 1; pl. xiv, figs. 4, 6; pl. xv, fig. 1.
Günther, A. 1870 A, p. 455.
1880 A, p. 340.
Hasse, C. 1878 A.
1882 A, p. 163, pl. xxii.

Hubrecht, A. A. W. 1878 A.
Jordan and Evermann 1896 A, p. 66.
Müller and Henle 1837 A, p. 111.
1841 A, p. 132, plates.
Stephan, P. 1900 A.
Woodward, A. S. 1889 D, p. 85.
Zittel, K. A. 1890 A, p. 104.

Raja dux Cope.

Cope, E. D. 1867 C, p. 141.
Woodward, A. S. 1889 D, p. 459.
Miocene; Maryland.

GRYPHODOBATIS Leidy. Type *G. uncus* Leidy.

Leidy, J. 1877 A, p. 249.
A genus whose position is doubtful.

Gryphodobatis uncus Leidy.

Leidy, J. 1877 A, p. 249, pl. xxxiv, figs. 8, 9.
Woodward, A. S. 1889 D, p. 156.
Phosphate beds; South Carolina.

ONCOBATIS Leidy. Type *O. pentagonus* Leidy.

Leidy, J. 1870 K, p. 70.
Nicholson and Lydekker, 1889 A, p. 934.
Woodward, A. S. 1889 D, p. 90.

Oncobatis pentagonus Leidy.

Leidy, J. 1870 K, p. 70.
Cope, E. D. 1883 L, p. 153. (Raja.)
Leidy, J. 1871 C, p. 370.
1873 B, pp. 264, 353, pl. xvii, figs. 18, 19.
Woodward, A. S. 1889 D, p. 90.
Pliocene; Idaho.

PRISTIDÆ.

Duméril, A. 1865 A, p. 471. (Pristides.)
Gegenbaur, C. 1872 A.
Günther, A. 1870 A, p. 436.
1880 A, p. 336.
1881 A, p. 686.
Hasse, C. 1882 A, p. 121.
Haswell, W. A. 1884 A, p. 116.
Hubrecht, A. A. W. 1878 A.
Jaekel, O. 1894 A, p. 75.
Jordan and Evermann 1896 A, p. 60.
Müller and Henle 1841 A, p. 105. (Pristides.)
Nicholson and Lydekker 1889 A, p. 930.
Pictet, F. J. 1854 A, p. 274. (Pristides.)
Woodward, A. S. 1885 B, p. 227.
1888 B, p. 451.
1889 D, p. 73.
1898 B, p. 52.
Zittel, K. A. 1890 A, p. 94.

PRISTIS LATHAM. Type *Squalus pristis* Linn. = *Pristis antiquorum*.

Latham, John 1794, Trans. Linn. Soc., ii, p. 276.
Agassiz, L. 1843 B, iii, p. 382.
Duméril, A. 1865 A, p. 471.
Gegenbaur, C. 1872 A, pl. iii, fig. 4; pl. xiii, figs. 4-6; pl. xiv, fig. 2.
Günther, A. 1880 A, p. 347.
Hasse, C. 1882 A, p. 121, pl. xvi.
Hubrecht, A. A. W. 1878 A, pl. ii, figs. 2-5, 8.
Jaekel, O. 1890 D.
1894 A.
Jordan and Evermann 1896 A, p. 60.
Müller and Henle 1837 A, p. 116.
1837 B, p. 399.
1841 A, p. 105.
Nicholson and Lydekker 1889 A, p. 190.
Owen, R. 1845 B, p. 40, pls. viii, ix.
Pictet, F. J. 1854 A, p. 275.
Stannius, H. 1854 A.
Tomes, C. S. 1898 A, p. 246.
Woodward, A. S. 1889 D, p. 73.
1899 A, p. 3.
Zittel, K. A. 1890 A, p. 94.

Pristis agassizi Gibbes.

Gibbes, R. W. 1847 B, p. 11, pl. i, figs. 6, 7.
Woodward, A. S. 1889 D, p. 75.
Eocene; South Carolina.

Pristis amblodon Cope.

Cope, E. D. 1869 L, p. 312.
1875 H, p. 362.
Woodward, A. S. 1889 D, p. 458.
Eocene; New Jersey.

Pristis attenuatus Cope.

Cope, E. D. 1869 F, p. 244.
1875 V, p. 29.
Woodward, A. S. 1889 D, p. 459.
Tertiary; North Carolina.

Pristis brachyodon Cope.

Cope, E. D. 1869 A, p. 312.
1875 V, p. 29.
Woodward, A. S. 1889 D, p. 459.
Cretaceous (Greensand); Virginia: Miocene: North Carolina.

Pristis curvidens Leidy.

Leidy, J. 1855 D.
Woodward, A. S. 1889 D, p. 75.
Cretaceous (Greensand); New Jersey.

Pristis ensidens Leidy.

Leidy, J. 1855 D.
1877 A, p. 252, pl. xxxiv, figs. 31, 32.
Woodward, A. S. 1889 D, p. 75.
Phosphate beds; South Carolina.

Superfamily MASTICURA Gill.

Gill, T. 1872 C, p. 22.
1882, in Jordan and Gilbert's Synop. Fishes N. A., p. 36.
1893 A, p. 130.
Jaekel, O. 1894 A, pp. 64, 115. (Centrobati.)
1898 A, p. 45. (Centrobati.)
1899 A, p. 298. (Centrobatidæ.)
Jordan and Evermann 1896 A, pp. 59, 79.

PTYCHODONTIDÆ.

Jaekel, O. 1898 A, p. 51. (Ptychodontinæ.)

HEMIPTYCHODUS Jaekel. Type *Ptychodus mortoni* Mantell.

Jaekel, O. 1894 A, p. 137.

Hemiptychodus mortoni (Mantell).

Mantell, G. A., in Morton, S. G. 1842 A, p. 215, pl. xi, figs. 7, 7*a*. (Ptychodus.)
Agassiz L. 1843 B, iii, p. 158, pl. xxv, figs. 1–3. (Ptychodus.)
Cope, E. D. 1874 C, p. 48. (Ptychodus.)
1875 E, p. 294. (Ptychodus.)
Dana, J. D. 1896 A, p. 843, fig. 1406. (Ptychodus.)
De Kay, J. E. 1842 B, p. 386. (Ptychodus.)
Dixon, F. 1878 A, p. 392, pl. xxxi, figs. 6, 7. (Ptychodus.)
Giebel, C. G. 1848 A, p. 334. (Ptychodus.)
Hilgard, E. W. 1860 A, p. 389. (Ptychodus.)
Jaekel, O. 1894 A, p. 137. (Hemiptychodus.)
Leidy, J. 1868 H, p. 205. (Ptychodus.)
1870 H, p. 12. (Ptychodus.)
1873 B, pp. 295, 352, pl. xviii, figs. 1–14. (Ptychodus.)
Morton, S. G. 1834 A, pl. xviii, figs. 1, 2. (No name or description).
Tuomey, M. 1858 A, p. 268. (Ptychodus.)
Williston, S. W. 1900 A, p. 30, pl. vii; pl. viii, fig. 1; pl. ix. (Ptychodus.)
1900 B, p. 238, pls. xxv, xxvi, fig. 1; pl. xxviii. (Ptychodus.)
Woodward, A. S. 1887 B, p. 130. (Ptychodus.)
1889 D, p. 149. (Ptychodus.)
Cretaceous; Alabama, Mississippi, Kansas.

PTYCHODUS Agassiz. Type *P. mammillaris* Agassiz.

Agassiz, L. 1843 B (1835), Feuill., p. 54.
1843 B (1839), iii, pp. 56, 150.
1844 A.
Cope, E. D. 1874 C, p. 47. (Sporetodus, type *S. janevaii.*)
1886 S.
Davis, J. W. 1890 A, p. 375.
Dixon, F. 1850 A, p. 361.
1858 A, p. 390.
Hasse, C. 1884, Palæontographica, xxxi, p. 9, pl. ii, figs. 16, 17. (Selache davisi.)
Jaekel, O. 1890 A, p. 94.
1891 D, p. 191.
1894 A, p. 132.
Geinitz, H. B. 1839 A, pp. 12, 38, 63.
Leidy J. 1868 H.
1870 H.
Mackie, S. J. 1863 B.
Owen, R. 1845 B, p. 57, pls. xvii–xix.
1860 E, p. 110.
Pictet, F. J. 1854 A, p. 264.
Priem, F. 1896 A.
Quenstedt, F. A. 1852 A, p. 180.
1885 A, p. 281.
Sauvage, H. E. 1870 A, p. 15.
Williston, S. W. 1900 A, p. 29.
Woodward, A. S. 1885 B, p. 107.
1887 B.
1888 I, p. 294, fig. 1.
1889 D, p. 122.
Zittel, K. A. 1890 A, p. 78, figs. 77, 78.

Ptychodus anonymus Willist.

Williston, S. W. 1900 A, p. 32, pl. xi, figs. 5–8, 16–18, 20–22, 24.
1900 B, p. 241, pl. xxix, figs. 5–8, 16–18, 20–22, 24.
Cretaceous (Niobrara, Benton?); Kansas.

Ptychodus decurrens Agassiz.

Agassiz, L. 1843 B (1839), Feuill., p. 54.
1843 B (1839), iii, p. 154, pl. xxv *b*, figs. 1, 2, 4, 6–8 (not figs. 3, 5).
Dixon, F. 1850 A, p. 362, pl. xxx, figs. 7, 8; pl. xxxi, fig. 1; pl. xxxii, fig. 5 (P. decurrens); p. 363, pl. xxxi, fig. 9 (P. depressus).
1858 A, p. 390, pl. xxx, figs. 7, 8; pl. xxxi, fig. 1; pl. xxxii, fig. 5.
Fritsch, A. 1878 A, p. 14, fig. 34.
Kiprijanoff, V. 1852 A, p. 490, pl. xiii, figs. 4, 5.
Owen, R. 1845 B, ii, p. 57, pls. xviii, xix.
Quenstedt, F. A. 1852 A, p. 181, pl. xiii, fig. 59.
1885 A, p. 281, text fig. 86; pl. xxi, figs. 63, 64.
Reuss, A. E. 1846 A, p. 1, pl. ii, figs. 9, 10.
Sauvage, H. E. 1870 A, p. 18.
1879 A, p. 53, pl. iii, figs. 25, 26.
Woodward, A. S. 1887 B, pl. x, figs. 1–10, 13.
1889 D, p. 138.
1898 B, p. 53, fig. 42.
Zittel, K. A. 1890 A, p. 79, figs. 78 *a*, *b*.
Cretaceous; England, France, Germany; also from Kearns Cañon, Arizona (specimen in U. S. National Museum).

Ptychodus janevaii Cope.

Cope, E. D. 1874 C, p. 47. (Sporetodus.)
1875 E, pp. 244, 294. (P. janewayii.)
Williston, S. W. 1900 A, p. 33, pl. xii, figs. 9, 10, 11. (P. janewayii.)
1900 B, p. 242, pl. xxx, figs. 9, 10, 11. (P. janewayii.)
Woodward, A. S. 1889 D, p. 151.
Cretaceous (Niobrara); Kansas.

Ptychodus mammillaris Agassiz.

Agassiz, L. 1843 B (1835), Feuill., p. 54.
1843 B (1839), iii, p. 151, pl. xxv *b*, figs. 11-20 (P. mammillaris); p. 154, pl. xxv *b*, figs. 3, 5 (P. decurrens); p. 155, pl. xxv *b*, figs. 9, 10 (P. altior).
Cope, E. D, 1875 E, p. 294.
Davis, J. W. 1890 A, p. 378, pl. xxxviii.
De Kay, J. E. 1842 B, p. 386.
Dixon, F. 1850 A, p. 361, pl. xxx, fig. 6; pl. xxxi, fig. 4.
1878 A, p. 390, pl. xxx, fig. 6; pl. xxxi, fig. 4.
Fritsch, A. 1878 A, p. 14, text fig. 33.
Giebel, C. G. 1848 A, p. 333.
Kiprijanoff, V. 1852 A, p. 487, pl. xii, fig. 3; pl. xiii, fig. 3.
Pictet, F. J. 1854 A, p. 265, pl. xxviii, fig. 27.
Quenstedt, F. A. 1852 A, p. 181.
1885 A, p. 282, pl. xxi, figs. 61, 62. (P decurrens.)
Reuss, A. E. 1846 A, p. 2, pl. ii, figs. 11-13.
Sauvage, H. E. 1870 A, p. 16, figs. 86-89.
Woodward, A. S. 1885 B, p. 109, fig. 81.
1889 D, p. 133.
Cretaceous: Europe, Delaware.
For additional citations of literature bearing on European specimens, see Woodward, A. S., 1889 D, p. 133.

Ptychodus martini Willist.

Williston, S. W. 1900 A, p. 32, pl. x.
1900 B, p. 240, pl. xxviii.
Cretaceous (Niobrara); Kansas.

Ptychodus occidentalis Leidy.

Leidy J. 1868 H, p. 207.
Cope, E. D. 1874 C, p. 48.
1875 E, p. 294.
Leidy, J. 1873 B, pp. 298, 352, pls. xvii, figs. 7, 8; pl. xviii, figs. 15-18.
Williston, S. W. 1900 A, p. 33, pl. xi, fig. 4; pl. xii, fig. 13.
1900 B, p. 242, pl. xxix, fig. 4; pl. xxx, fig. 13.
Woodward, A. S. 1889 D, p. 151.
Cretaceous (Niobrara); Kansas.

Ptychodus papillosus Cope.

Cope, E. D. 1875 E, p. 294.
1875 F, p. 63.
Cretaceous; Colorado.

Ptychodus parvulus Whiteaves.

Whiteaves, J. F. 1889 B, p. 191, pl. xxvi, figs. 5 *a*, *b*, *c*.
Cretaceous (Niobrara); Manitoba.

Ptychodus polygyrus Agassiz.

Agassiz, L. 1843 B (1835), Feuill., p. 55.
Agassiz, L., in Buckland, W. 1837 A, pl. xxxvii *f*. (No description).
Agassiz, L. 1843 B (1839) B, iii, p. 156, pl. xxv, figs. 4-11; pl. xxv *b*, figs. 21-23.
Cope, E. D. 1874 C, p. 48.
1875 E, p. 294.
Dixon, F. 1850 A, p. 363, pl. xxx, fig. 9; pl. xxxi, fig. 10 (P. polygyrus); p. xii, pl. xxx, figs. 1, 2 (P. latissimus).
1878 A, p. 391, pl. xxx, figs. 1, 2 (P. latissimus); p. 392, pl. xxx, fig. 9; pl. xxi, fig. 10 (P. polygyrus).
Fritsch, A. 1878 A, p. 14, fig. 35. (P. polygirus.)
Gibbes, R. W. 1850 A.
1850 G, pl. 42, figs. 5, 6.
Giebel, C. G. 1848 A, p. 333.
Kiprijanoff, V. 1852 A, p. 494, pl. xiii, fig. 6.
Leidy, J. 1868 H, p. 208.
1873 B, p. 352.
Mackie, S. J. 1863 B, pl. ix.
Williston, S. W. 1900 A, p. 31, pl. xi, fig. 9; pl. x, fig. 14.
1900 B, p. 240, pl. xxix, fig. 9; pl. xxx, fig. 14.
Woodward, A. S. 1885 B, p. 109, fig. 82.
1889 D, p. 143.
1898 B, p. 52, fig. 41.
Cretaceous; Alabama, Kansas.

Ptychodus whipplei Marcou.

Marcou, J. 1858 A, p. 33, pl. i, figs. 4, 4*a*.
Cope, E. D. 1874 C, p. 48. (P. whippleyi.)
1875 E, p. 294. (P. whippleyi.)
1875 F, p. 63. (P. whippleyi.)
Leidy, J. 1873 B, pp. 300, 352, pl. xviii, figs. 19, 20. (P. whippleyi.)
Newberry, J. S. 1876 A, p. 137, pl. iii, figs. 2-2*f*. (P. whippleyi.)
Osborn, Scott and Speir 1878 A, p. 106. (P. whippleyi.)
Williston, S. W. 1900 A, p. 33, pl. xi, figs. 10-15.
1900 B, p. 243, pl. xxix, figs. 10-15. (P. whippleyi.)
Woodward, A. S. 1889 D, p. 152. (P. whippleyi.)
Cretaceous (Niobrara); Kansas, Colorado, New Mexico.

Ptychodus sp. indet.

Williston, S. W. 1900 A, p. 34, pl. xi, figs. 2, 3, pl. xiii, fig. 53.
1900 B, p. 243, pl. xxix, figs. 2, 13; pl. xxxi, fig. 53.
Cretaceous (Benton); Kansas

DASYATIDÆ.

Jordan and Evermann 1896 A, p. 79.
Unless otherwise stated, the authors below cited refer to this family under the name *Trygonidæ*:
Duméril, A. 1865 A, p. 578. (Trygones.)
Gegenbaur, C. 1865 B.
Gill, T. 1893 A, p. 130. (Dasybatidæ.)
Günther, A. 1870 A, p. 471.
1880 A, p. 342.
1881 A, p. 686.
Hasse, C. 1878 A, p. 169.
1879 A, p. 47.
1882 A, p. 136.
Haswell, W. A. 1884 A, p. 117.

Howes, G. B. 1890 A.
Jaekel, O. 1890 C, p. 56.
1891 D, p. 191. ("Torpediniden.")
1894 A, p. 139. (Trygoninæ.)
1898 A, p. 51. (Trygoninæ.)
Müller and Henle 1841 A, p. 156. (Trygones.)
Woodward, A. S. 1889 D, p. 152.
Zittel, K. A. 1890 A, p. 105.

DASYATIS Rafinesque. Type *D. ujus*=*D. pastinica* Linn.

Rafinesque, C. S., 1810, Caratteri di alcuni nuovi generi, p. 16.

Unless otherwise stated, the following authors refer to this genus under the name *Trygon:*

Cope, E. D. 1879 O. (Xiphotrygon, type *X. acutidens.*)
1884 O, p. 49. (Xiphotrygon.)
Duméril, A. 1865 A, p. 582.
Gegenbaur, C. 1872 A, pl. iii; pl. vi, fig. 6; pl. xi, fig. 4; pl. xiii, fig. 2; pl. xiv, fig. 3.
Günther, A. 1880 A, p. 343.
Hasse, C. 1878 A, p. 170.
1882 A, p. 142, pl. xix.
Haswell, W. A. 1884 A, p. 100.
Howes, G. B. 1890 A.
Hubrecht, A. A. W. 1878 A.
Jaekel, O. 1890 A, p. 94.
1894 A, p. 144.
Jordan and Evermann 1896 A, p. 82. (Dasyatis.)
Marsh, O. C. 1877 D, p. 261. (Heliobatis, type *H. radians.*)
Müller and Henle 1837 A, p. 117.
1838 A, p. 90.
1841 A, p. 158.
Newberry, J. S. 1888 B, p. 121. (Heliobatis.)
Nicholson and Lydekker 1889 A, p. 937.
Woodward, A. S. 1889 D, p. 153. (Xiphotrygon.)
Zittel, K. A. 1890 A, p. 105. (Trygon, Xiphotrygon.)

Dasyatis carolinensis (Emmons).

Emmons, E. 1858 B, p. 243, figs. 91, 92, 94, 95. (Trygon.)
1860 A, p. 215, fig. 183^5. (Trygon.)
Tertiary; North Carolina.

Dasyatis hastata? (De Kay).

De Kay, J. E. 1842 B, p. 373, pl. lxv, fig. 214. (Trygon.)
Jordan and Evermann 1896 A, p. 84.
Leidy, J. 1860 B, p. 119, pl. xxvii, figs. 1, 2.
Post-pliocene; South Carolina.

Dasyatis radians (Marsh).

Marsh, O. C. 1877 D, p. 256. (Heliobatis.)
Cope, E. D. 1879 O. (Xiphotrygon acutidens.)
1884 O, p. 50, pl. i, figs. 1-5. (X. acutidens.)
Jaekel, O. 1894 A, p. 134. [Trygon (Tæniura.)]
King, C. 1878 A, p. 394. (Heliobatis.)
Woodward, A. S. 1889 D, p. 155. (X. acutidens.)
Zittel, K. A. 1890 A, p. 105. (X. acutidens.)
Eocene (Green R.); Wyoming.

Dasyatis sp. indet.

Leidy, J. 1873 B, p. 353, pl. xxxii, figs. 54, 55. (Trygon.)
Miocene; Virginia.

MYLIOBATIDÆ.

Duméril, A. 1865 A, p. 631. (Myliobatides.)
Gegenbaur, C. 1865 B.
Gill, T. 1893 A, p. 130. (Aëtobatidæ.)
1894 A. (Aëtobatidæ.)
Günther, A. 1870 A, p. 488. (Myliobatina.)
1880 A, p. 344.
1881 A, p. 686.
Hasse, C. 1878 A, p. 170.
1879 A, p. 47.
1882 A, p. 149.
Haswell, W. A. 1884 A, p. 117.
Jaekel, O. 1891 D, p. 191.
1894 A, p. 150. (Myliobatinæ.)
1898 A, p. 51. (Myliobatinæ.)
Jordan and Evermann, 1896 A, p. 87.
Müller and Henle 1841 A, p. 176. (Myliobatides.)
Nicholson and Lydekker, 1889 A, p. 935.
Pictet, F. J. 1854 A, p. 279. (Myliobatides.)
Semon, R. 1899 A, p. 76.
Stannius H. 1854 A. (Myliobatides.)
Steinmann and Döderlein, 1890 A, p. 549.
Woodward, A. S. 1889 D, p. 109.
Zittel, K. A. 1890 A, p. 99.

MYLIOBATIS Dum. Type *Raja aquila* Linn.

Duméril, C. 1817, in Cuvier's Règne Anim., ii, p. 137.

By many of the following authors this name is spelled *Myliobates.*

Agassiz, L. 1843 B, iii, p. 317.
Duméril, A, 1865 A, p. 633.
Gibbes, R. W. 1850 G.
Gill, T. 1894 A, p. 113.
Günther, A. 1870 A, p. 488.
1880 A, p. 344.
Hasse, C. 1882 A, p. 148, pls. xx, xxi.
Howes, G. B. 1890 A.
Hubrecht, A. A. W. 1878 A.
Jaekel, O. 1890 A, p. 94.
1894 A, p. 129.
Jordan and Evermann 1896 A, p. 89.

Müller and Henle, 1837 A, p. 117.
1837 B, p. 401.
1841 A, p. 176.
Nicholson and Lydekker 1889 A, p. 935.
Owen, R. 1845 B, p. 46, pls. xxv-xxvii.
Quenstedt, F. A. 1852 A, p. 182.
1885 A, p. 287.
Röse, C. 1897 A, p. 39, figs. 9-15.
Sismonda, E. 1849 A, p. 50.
Steinmann and Döderlein, 1890 A, p. 549.
Tomes, C. S. 1898 A, p. 247.
Treuenfels, P. 1896 A, p. 1, pls. i, ii.
Woodward, A. S. 1888 F.
1889 D, p. 109.
1899 A, p. 3.
Wyman, J. 1850 B, p. 234.
Zittel, K. A. 1890 A, p. 100.

Myliobatis bisulcus Marsh.

Marsh, O. C. 1870 E, p. 229.
Leidy, J. 1877 A, p. 239.
Woodward, A. S. 1889 D, p. 121.
Eocene; New Jersey.

Myliobatis copeanus Clark.

Clark, W. B. 1895 A, p. 4.
1897 A, p. 61, pl. vii, figs. 3*a*, 3*b*.
Eocene; Maryland, Virginia.

Myliobatis fastigiatus Leidy.

Leidy, J. 1877 A, p. 239, pl. xxxi, fig. 11.
1876 E, p. 86. (No description).
Woodward, A. S. 1889 D, p. 121.
Eocene; New Jersey.

Myliobatis gigas Cope.

Cope, E. D. 1867 C, p. 140.
Leidy, J. 1877 A, p. 241, pl. xxxiii, fig. 4.
Woodward, A. S. 1889 D, p. 122.
Miocene; Maryland.

Myliobatis glottoides Cope.

Cope, E. D. 1870 F, p. 293.
Eocene; New Jersey.

Myliobatis holmesii Gibbes.

Gibbes, R. W. 1850 G, p. 299, pl. xlii, figs. 1-3.
Cope, E. D. 1867 C, p. 140.
Gibbes, R. W. 1850 B. (No description.)
Leidy, J. 1876 E, p. 86. (M. magister; no description).
1877 A, p. 233, pl. xxxiii, fig. 7 (M. magister); p. 234 (M. holmesii).
Woodward, A. S. 1889 D, p. 122.
Phosphate beds; South Carolina.

Myliobatis jugosus Leidy.

Leidy, J. 1877 A, p. 240, pl. xxxi, figs. 4, 5.
1876 E, p. 86. (No description.)
Woodward, A. S. 1889 D, p. 122.
Eocene; New Jersey.

Myliobatis leidyi Hay.

Hay, O. P. 1899 E, p. 785.
Leidy, J. 1855 C, p. 395. (M. serratus, not of H. v. Meyer, 1843.)
1877 A, p. 239, pl. xxxii, fig. 5. (M. serratus.)
Woodward, A. S. 1888 F, p. 38. (M. serratus.)
1889 D, p. 123. (M. serratus.)
Eocene; New Jersey.

Myliobatis mordax Leidy.

Leidy, J. 1877 A, p. 234, pl. xxxiv, fig. 3.
1876 E, p. 86. (No description.)
Woodward, A. S. 1889 D, p. 123.
Phosphate beds: South Carolina.

Myliobatis pachyodon Cope.

Cope, E. D. 1867 C, p. 140.
Leidy, J. 1877 A, p. 242, pl. xxxii, fig. 6.
Woodward, A. S. 1889 D, p. 123.
Miocene; Maryland.

Myliobatis rectidens Cope.

Cope, E. D. 1870 F, p. 294.
Cretaceous; New Jersey.

Myliobatis rugosus Leidy.

Leidy, J. 1855 C, p. 395.
1855 C, p. 396. (M. obesus.)
1877 A, p. 236, pl. xxxi, figs. 6-10; pl. xxxiv, fig. 44. (M. obesus.)
Woodward, A. S. 1889 D, p. 123.
Eocene; New Jersey.

Myliobatis transversalis Gibbes.

Gibbes, R. W. 1850 G, pl. xlii, fig. 4.
1850 B. (No description.)
Woodward, A. S. 1889 D, p. 124.
Eocene; South Carolina.

Myliobatis vicomicanus Cope.

Cope, E. D. 1867 C, p. 140.
1870 F, p. 294.
Leidy, J. 1877 A, p. 242, pl. xxxiii, fig. 5.
Woodward, A. S. 1889 D, p. 122. (Syn. of M. gigas.)
Miocene; Maryland.

Myliobatis sp. indet.

Leidy, J. 1873 B, p. 354, pl. xxxii, figs. 52, 53.
Miocene; Virginia.

MESOBATIS Leidy. Type *Aëtobatis eximius* Leidy.

Leidy J. 1877 A, p. 244.
Woodward, A. S. 1889 D, p. 131.

Mesobatis eximius Leidy.

Leidy, J. 1855 C, p. 396. (Aëtobatis.)
1877 A, p. 244, pl. xxxi, fig. 12.
Woodward, A. S. 1889 D, p. 131.
Phosphate beds; South Carolina.

AËTOBATUS Blainville. Types *A. vulgaris*, *A. narinari*, etc.

Blainville, H. M. D., 1816, Jour. de Physique, lxxxiii, p. 261.
Most of the authors here cited spell this name Aëtobatis.
Agassiz, L. 1843 B, iii, p. 325.
Duméril, A. 1865 A, p. 640.
Gill, T. 1894 A, p. 114.
Günther, A. 1870 A, p. 492.
1880 A, p. 345.
Hasse, C. 1882 A, p. 155, pl xxi.
Jaekel, O. 1894 A, p. 130.
1899 A, p. 266.
Jordan and Evermann 1896 A, p. 88.
Müller and Henle 1837 A, p. 118.
1837 B, p. 401.
1841 A, p. 179.
Pictet, F. J. 1854 A, p. 281.
Quenstedt, F. A. 1852 A, p. 182.
1885 A, p. 287.
Woodward, A. S. 1889 D, p. 127.
1899 A, p. 5.
Zittel, K. A. 1890 A, p. 101.

Aëtobatus arcuatus Agassiz.

Agassiz, L. 1843 B, iii, p. 327. (Aëtobatis.)
Cope, E. D. 1867 C, p. 139. (Aëtobatis.)
1875 V, p. 29. (Aëtobatis.)
Leidy, J. 1877 A, p. 245, pl. xxxi, fig. 14. (Ætobatis.)
Woodward, A. S. 1889 D, 130. (Aëtobatis.)
Miocene; Europe, Maryland, North Carolina. The identification of the American specimens is doubtful.

Aëtobatus perspicuus Leidy.

Leidy, J. 1855 C, p. 396. (Aëtobatis).
1877 A, p. 244, pl. 31, fig. 13. (Ætobatis).
Woodward, A. S. 1889 D, p. 131. (Aëtobatis).
Eocene ?; New Jersey.

Aëtobatus profundus Cope.

Cope, E. D. 1867 C, p. 139. (Aëtobatis).
Leidy, J. 1877 A, p. 246, pl. xxxi, fig. 19. (Ætobatis.)
Woodward, A. S. 1889 D, p. 131. (Aëtobatis.)
Miocene; Maryland.

PLINTHICUS Cope. Type *P. stenodon* Cope.

Cope, E. D. 1869 L, p. 316.
Woodward, A. S. 1889 D, p. 459. (Syn.? of Aëtobatus.)

Plinthicus stenodon Cope.

*Cope, E. D.*1869 L, p. 316.
1875 H, p. 362.
Woodward, A. S. 1889 D, p. 459.
Miocene; New Jersey.

RHINOPTERA Kuhl. Type *R. marginata* Cuvier.

Kuhl, 1828, in Cuvier's Règne Anim., ed. 2, p. 401.
Agassiz, L. 1843 B, iii, p. 79 (Zygobatis); p. 328 (Zygobates).
Duméril, A. 1865 A, p. 644.
Günther, A. 1880 A, p. 346.
Hasse, C. 1882 A, p. 158, pl. xxi.
Jaekel, O. 1894 A, p. 129.
Müller and Henle 1837 B, p. 401.
1841 A, p. 181.
Quenstedt, F. A. 1885 A, p. 288. (Zygobatis, Rhinoptera.)
Woodward, A. S. 1885 B, p. 270. (Zygobatis.)
1889 D, p. 125. (Rhinoptera.)
1899 A, p. 5. (Rhinoptera or Zygobatis.)
Zittel, K. A. 1890 A, p. 101. (Zygobatis.)

Rhinoptera dubia Leidy.

Leidy, J. 1855 C, p. 396. (Zygobatis.)
1877 A, p. 247, pl. xxxi, figs. 21–37.
Woodward, A. S. 1889 D, p. 127.
Phosphate beds; South Carolina.

Rhinoptera, sp. indet.

Agassiz, L. 1856 A, p. 275. (Zygobates.)
1857 A, p. 316, pl. i, figs. 31–35. (Zygobates.)
Leidy, J. 1871 C, p. 370. (Zygobates.)
Miocene; California.

MANTIDÆ.

Jordan and Evermann 1896 A, p. 91.
Duméril, A. 1865 A, p. 649. (Cephalopteræ.)
Gill, T. 1893 A, p. 130. (Mobulidæ.)
Günther, A. 1870 A, p. 435. (Ceratopterina.)
Jaekel, O. 1894 A, pp. 115–150. (Ceratopterina.)
1898 A, p. 51. (Ceratopterinæ.)
Müller and Henle 1838 A, p. 91. (Cephalopteræ.)
1841 A, p. 184. (Cephalopteræ.)

MANTA Bancroft. Type *M. birostris* Walb.

Bancroft, E. N. 1829, Zool. Jour., iv, p. 444.
Duméril, A. 1865 A, p. 659. (Ceratoptera.)
Günther, A. 1870 A, p. 497. (Ceratoptera.)
1880 A, p. 347. (Ceratoptera.)
Hasse, C. 1882 A, p. 159, pl. xxi. (Ceratoptera.)
1885 A, p. 20. (Ceratoptera.)
Jaekel, O. 1894 A. (Ceratoptera.)
Jordan and Evermann 1896 A, p. 92. (Manta.)
Müller and Henle 1837 A, p. 118. (Ceratoptera.)
1837 B, p. 401. (Ceratoptera.)
1838 A, p. 91. (Ceratoptera.)
1841 A, p. 184. (Ceratoptera.)

Zittel, K. A. 1890 A, p. 102. (Ceratoptera.)

Manta unios (Leidy).

Leidy, J. 1876 E, p. 86. (Ceratoptera.)
1877 A, p. 248, pl. xxxiv, figs. 1, 2. (Ceratoptera.)
Woodward, A. S. 1889 D, p. 131. (Ceratoptera.)
Phosphate beds; South Carolina.

Subclass HOLOCEPHALA Bonaparte.[1]

Bonaparte, C. L. 1832–41, Icon. Fauna Ital., iii. (Pesci), Introd. (Holocephala.)
Bridge, T. W. 1896 A, p. 534.
Cope, E. D. 1872 C.
1877 O, p. 41.
1878 A, p. 292.
1884 N, p. 579.
1884 HH.
1885 G.
1887 S, p. 324.
1889 R, p. 854.
1891 N, p. 10.
1898 B, pp. 17, 28.
Duméril, A. 1865 A, p. 663.
Gadow, H. 1898 A, p. 6.
Gadow and Abbott 1895 A.
Gegenbaur, C. 1865 B, pp. 88, 145.
1898 A.
Günther, A. 1870 A, p. 348.
1880 A, p. 348.
1881 A, p. 686.
Haeckel, E. 1895 A, p. 243.
Hasse, C. 1878 A.
1882 A, p. 25.
Hubrecht, A. A. W. 1877 A.
1878 A.
Huxley, T. H. 1872 A, p. 120.
1876 A.
Müller, J. 1835 A.
1846 C, p. 203.
Nicholson and Lydekker 1889 A, p. 949. (Chimeroidei.)
Owen, R. 1860 E, p. 116.
1866 A.
Reis, O. M. 1896 A, p. 204.
1897 A, p. 65.
Stannius, H. 1854 A.
Steinmann and Döderlein 1890 A, p. 550.
Woodward, A. S. 1889 D, p. vi.
1891 A, pp. xvi, 36.
1898 B, p. 154.
Zittel, K. A. 1890 A, p. 106.

Superfamily CHIMÆROIDEA.[2]

Cope, E. D. 1889 R, p. 854.
1891 N, p. 14.
1898 B, p. 28.
Daviess, W. 1872 A.
Dean, B. 1895 A, p. 99.
Newton, E. T. 1878 C.
Woodward, A. S. 1888 I, p. 299.
1891 A, p. 36.
1898 B, p. 54.

PTYCTODONTIDÆ.

Woodward, A. S. 1891 A, p. 37.
Cope, E. D. 1891 N, p. 14.
1898 B, p. 28.
Eastman, C. R. 1898 B.

PTYCTODUS Pander. Type *P. obliquus* Pander.

Pander, C. H. 1858 A, p. 48.
Cope, E. D. 1871 D, p. 423.
1872 F, p. 339.
Eastman, C. R. 1898 B, pp. 473, 548.
Miller, S. A. 1889 A, p. 610.
Newberry and Worthen 1866 A, p. 106. (Rinodus, type *R. calceolus*.)
1870 A, p. 374.
Rohon, J. V. 1895 A.
Steinmann and Döderlein, 1890 A, p. 50.
Woodward, A. S. 1891 A, p. 38.
1898 B, p. 55.
Zittel, K. A. 1890 A, p. 108.

Ptyctodus calceolus Newb. and Worth.

Newberry and Worthen, 1866 A, p. 106, pl. x, figs. 10–10c. (Rinodus.)
Eastman, C. R. 1898 A, p. 115, fig. 10, A.
1898 B, p. 476, figs. 1–17.
1899 B, p. 282.
Lesley, J. P. 1889 A, p. 841, figures.
Miller, S. A. 1889 A, p. 611, fig. 1170.
Newberry, J. S. 1875 A, p. 59, pl. lix, figs. 13, 13*a*. (Ptyctodus.)
1889 A, p. 62. (Rhynchodus.)
Newberry and Worthen, 1870 A, p. 374.
Weller, S. 1899 A.
Whiteaves, J. F. 1892 A, p. 353.
1898 B, p. 410.
Woodward, A. S. 1891 A, p. 39.
Devonian (Hamilton); Illinois, Iowa, Missouri, Manitoba.

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[1] This name is by most authors spelled *Holocephali*.

[2] The name of this superfamily is commonly spelled *Chimæroidei*.

Ptyctodus compressus Eastman.

Eastman, C. R. 1898 B, p. 479, figs. 18-27.
Devonian (Hamilton); Wisconsin.

Ptyctodus ferox Eastman.

Eastman, C. R. 1898 B, p. 480, figs. 35-40; p. 552.
1899 B, p. 282.
Devonian (Hamilton); Wisconsin.

RHYNCHODUS Newb. Type *R. secans* Newb.

Newberry, J. S. 1873 A, pp. 307, 254, 266.
Eastman, C. R. 1900 C, p. 392.
Huene, F. 1900 A, p. 64.
Miller, S. A. 1889 A, p. 611.
Newberry, J. S. 1870 B, p. 153.
1875 A, p. 58.
1889 A, p. 45.
Nicholson and Lydekker 1889 A, p. 952. (Rhynchodes.)
Woodward, A. S. 1891 A, p. 39.
1898 B, p. 55.
Zittel, K. A. 1890 A, p, 108. (Rhynchodes.)

Rhynchodus excavatus Newb.

Newberry, J. S. 1877 A, p. 397.
Eastman, C. R. 1898 B, p. 486.
1899 B, p. 282.
Newberry, J. S. 1878 A, p. 192.
1889 A, p. 50, pl. xxix, fig. 1.
Woodward, A. S. 1891 A, p. 39.
Devonian (Hamilton); Wisconsin, Iowa.

Rhynchodus occidentalis Newb.

Newberry, J. S. 1878 A, p. 192.
Eastman, C. R. 1898 B, p. 485.
Woodward, A. S. 1891 A, p. 39.
Devonian (Hamilton); Iowa.

Rhynchodus secans Newb.

Newberry, J. S. 1873 A, p. 310, pl. xxvi figs. 1, 1*a*; pl. xxix, figs. 1-2*a*.
Eastman, C. R. 1898 B, pp. 485, 546.
Lesley, J. P. 1889 A, p. 881, figures.
1892 A, pl. clix.
Newberry, J. S. 1889 A, p. 47, pl. xxviii, figs. 1-3.
Woodward, A. S. 1891 A, p. 39.
Devonian (Corniferous); Ohio.

Rhynchodus sp. indet.

Whiteaves, J. F. 1892 A, p. 353. (No description).
Devonian; Manitoba.

PALÆOMYLUS Woodward. Type *Rhynchodus frangens* Newb.

Woodward, A. S. 1891 A, p. 39.
Eastman, C. R. 1898 B, p. 545.

Palæomylus crassus (Newb.).

Newberry, J. S. 1873 A, p. 312, pl. xxix, fig. 3. (Rhynchodus.)
Eastman, C. R. 1898 B, p. 545.
Lesley, J. P. 1889 A, p. 879, figure. (Rhynchodus.)
1892 A, pl. cl. (Rhynchodus.)
Newberry, J. S. 1889 A, p. 49, pl. xxviii, fig. 4. (Rhynchodus.)
Woodward, A. S. 1891 A, p. 40.
Devonian (Corniferous); Ohio.

Palæomylus frangens (Newb.).

Newberry, J. S. 1873 A, p. 311, pl. xxviii, figs. 2, 2*a*, 3. (Rhynchodus.)
Eastman, C. R. 1898 B, p. 545.
Lesley, J. P., 1889 A, p. 880, figure. (Rhynchodus.)
1892 A, pl. clix. (Rhynchodus.)
Miller, S. A, 1889 A, p. 611, fig. 1174. (Rhynchodus.)
Newberry, J. S. 1889 A, p. 48, pl. xxix, figs. 2, 3.
Woodward A. S. 1891 A, p. 40.
Devonian (Corniferous); Ohio.

Palæomylus greenei (Newb.).

Newberry, J. S. 1889 A, p. 51. (Rhynchodus.)
Eastman, C. R. 1898 B, p. 546, fig. 48.
Woodward, A. S. 1891 A, p. 40.
Devonian (Hamilton); Wisconsin.

CHIMÆRIDÆ.

Agassiz, L. 1843 B, iii, p. 336. ("Chimérides.")
Brühl, B. C. 1847 A. ("Chimæren.")
Daviess, W. 1872 A.
Dean, B. 1895 A.
Egerton, P. G. 1847 A.
1871 A.
Gadow and Abbott 1895 A.
Gegenbaur, C. 1865 B, p. 88.
Günther, A. 1870 A, p. 349.
1880 A, p. 348.
1881 A, p. 686.
Hubrecht, A. A. W. 1877 A.
Jordan and Evermann 1896 A, p. 93.
Köstlin, O. 1844 A, p. 417.
Newton, E. T. 1878 C.
Nicholson and Lydekker 1889 A, p. 950.
Reis, O. M. 1895 A.
Stannius, H. 1854 A. (Chimæræ.)
Woodward, A. S. 1891 A, p. 52.
1898 B, p. 58.
Zittel, K. A. 1890 A, p. 107.

Chimæra Linn. Type *C. monstrosa* Linn.

Linnæus, C., 1758, Syst. Nat., ed. x, p 236.
Agassiz, L. 1843 B, iii, pp. 64, 336, 354.
1844 A.
Brühl, B. C. 1847 A.
Duméril, A. 1865 A, p. 684.
Egerton, P. G. 1847 A.
Gegenbaur, C. 1898 A.
Goette, A. 1878 A, p. 531.
Hasse, C. 1882 A, p. 25.
Howes, G. B. 1887 A, p. 22.
Hubrecht, A. A. W. 1877 A.
1878 A.
Huxley, T. H. 1872 A, p. 113
1876 A.
Kölliker, A. 1860 B.
Marsh, O. C. 1877 E.
Metschnikoff, O. 1879 A, pl. xxiv, figs. 8–12
Müller, J. 1835 A.
Owen, R. 1845 B, p. 64, pl. xxix.
1860 E, p. 116.
Parker, W. K. 1871 A, p. 194.
Reis, O. M. 1895 A.
Röse, C. 1895 A, p. 568.
Ryder, J. A. 1886 A.
Stannius, H. 1854 A.
Stephan, P. 1900 A.
Woodward, A. S. 1891 A, p. 91.
Zittel, K. A. 1890 A, p. 112.

There are no known American fossil species belonging to this genus.

Edaphodon Buckland. Type *E. bucklandi* Agassiz.

Buckland, W., 1838, Proc. Geol. Soc., ii, p. 687.
Agassiz, L. 1843 B, iii, p. 340 (Psittacodon, in part); p. 350 (Edaphodon).
Ammon, L. 1896 A. (On Ischyodus.)
Cope, E. D. 1875 E, p. 283. (Diphrissa.)
1875 K. (Diphrissa, type *Ischyodus solidulus*.)
Egerton, P. G. 1847 A, p. 351.
Leidy, J. 1873 B, p. 306 (Edaphodon), p. 309 (Eumylodus, type *E. laqueatus*).
Marsh, O. C. 1870 E, p. 230. (Dipristis.)
Newton, E. T. 1878 C.
Nicholson and Lydekker 1889 A, p. 951.
Noetling, F. 1885 A, p. 1.
Owen, R. 1860 E, p. 117.
Philippi, E. 1897 A, p. 1. (On Ischyodus.)
Pictet, F. J. 1854 A, p. 232.
Woodward, A. S. 1888 I, p. 300.
1891 A, p. 73.
Zittel, K. A. 1890 A, p. 111 (Edaphodon); p. 112 (Eumylodus).

Edaphodon divaricatus (Cope).

Cope, E. D. 1869 L, p. 315. (Ischyodus.)
1875 E, pp. 284, 294. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon eocænus (Cope).

Cope, E. D. 1875 E, pp. 285, 288. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Eocene; New Jersey.

Edaphodon fecundus (Cope).

Cope, E. D. 1875 E, pp. 285, 291. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon gaskillii (Cope).

Cope, E. D. 1875 E, pp. 285, 290. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon incrassatus (Cope).

Cope, E. D. 1875 E, pp. 285, 289. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon laqueatus (Leidy).

Leidy, J. 1873 B, pp. 309, 351, pls. xix, figs. 21, 22; pl. xxxvii, figs. 13, 14. (Eumylodus.)
Cope, E. D. 1875 E, p. 282. (Eumylodus.)
Woodward, A. S. 1891 A, p. 86.
Cretaceous; Mississippi.

Edaphodon laterigerus (Cope).

Cope, E. D. 1869 F, p. 243. (Ischyodus.)
1875 E, pp. 284, 288. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon latidens (Cope).

Cope, E. D. 1875 E, p. 283. (Diphrissa.)
Woodward, A. S. 1891 A, p. 86.
Cretaceous; New Jersey.

Edaphodon longirostris (Cope).

Cope, E. D. 1875 E, pp. 284, 287. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon miersii (Marsh).

Marsh, O. C. 1870 E, p. 230. (Dipristis.)
Cope, E. D. 1875 E, pp. 285, 292. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon mirificus Leidy.

Leidy, J. 1856 K, p. 221.
Cope, E. D. 1875 E, pp. 285, 291. (Ischyodus.)
Leidy, J. 1873 B, pp. 306, 350, pl. xxxvii, figs. 6–12.
Newton, E. T. 1878 C, p. 24.
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon monolophus (Cope).

Cope, E. D. 1869 L, p. 314. (Ischyodus.)
1875 E, pp. 285, 289. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon smockii (Cope).

Cope, E. D. 1869 L, p. 316. (Ischyodus.)
1875 E, pp. 284, 288. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon solidulus (Cope).

Cope, E. D. 1869 F, p. 244. (Ischyodus.)
1875 E, p. 283. (Diphrissa.)
1875 K. (Diphrissa.)
Woodward, A. S. 1891 A, p. 86.
Cretaceous; New Jersey.

Edaphodon stenobryus (Cope).

Cope E. D. 1875 E, p. 285. (Ischyodus.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

Edaphodon tripartitus (Cope).

Cope, E. D. 1875 E, pp. 284, 286. (Ischyodus.)
1869 L, p. 314. (I. mirificus, *errore*.)
Woodward, A. S. 1891 A, p. 85.
Cretaceous; New Jersey.

MYLOGNATHUS Leidy. Type *M. priscus* Leidy.

Leidy, J. 1856 Q, p. 312.
1860 A, p. 153.
Nicholson and Lydekker 1889 A, p. 951.
Woodward, A. S. 1891 A, p. 86. (Syn. of Edaphodon.)

Mylognathus priscus Leidy.

Leidy, J. 1856 Q, p. 312.
Cope, E. D. 1875 E, p. 293.
Leidy, J. 1860 A, p. 153, pl. xi, figs. 24-30.
Woodward, A. S. 1891 A, p. 86. (Edaphodon?.)
Eocene (Fort Union); Nebraska.

BRYACTINUS Cope. Type *B. amorphus* Cope.

Cope, E. D. 1875 E, p. 282.
Nicholson and Lydekker 1889 A, p. 951.
Woodward, A. S. 1891 A, p. 86. (Syn.? of Edaphodon.)

Bryactinus amorphus Cope.

Cope, E. D. 1875 E, p. 282, pl. xlv, fig. 12.
Woodward, A. S. 1891 A, p. 86. (Edaphodon?.)
Cretaceous; New Jersey.

ISOTÆNIA Cope. Type *I. neocæsariensis* Cope.

Cope, E. D. 1875 E, p. 293.
Nicholson and Lydekker 1889 A, p. 951.
Woodward, A. S. 1891 A, p. 86. (Syn.? of Edaphodon.)

Isotænia neocæsariensis Cope.

Cope, E. D. 1875 E, p. 293.
Woodward, A. S. 1891 A, p. 86. (Edaphodon?.)
Cretaceous; New Jersey.

LEPTOMYLUS Cope. Type *L. densus* Cope.

Cope, E. D. 1869 L, p. 313.
1875 E, p. 281.
Nicholson and Lydekker 1889 A, p. 951.
Woodward, A. S. 1891 A, p. 87.

Leptomylus cookii Cope.

Cope, E. D. 1870 H, p. 384.
1875 E, p. 382.
Woodward, A. S. 1891 A, p. 87.
Cretaceous; New Jersey.

Leptomylus densus Cope.

Cope, E. D. 1869 L, p. 313.
1875 E, p. 281.
Woodward, A. S. 1891 A, p. 86.
Cretaceous; New Jersey.

Leptomylus forfex Cope.

Cope, E. D. 1875 E, p. 281.
Woodward, A. S. 1891 A, p. 87.
Cretaceous; New Jersey.

SPHAGEPŒA Cope. Type *S. aciculata* Cope.

Cope, E. D. 1869 F, p. 241.
1875 E, p. 293.
Woodward, A. S. 1891 A, p. 84.

Sphagepœa aciculata Cope.

Cope, E. D. 1869 F, p. 241.
1875 E, p. 293.
Woodward, A. S. 1891 A, p. 84.
Cretaceous; New Jersey.

DICTYORHABDUS Walcott. Type *D. priscus* Walcott.

Walcott, C. D. 1892 A, p. 165.
Amer. Geologist, 1891 E. (Palæchimæra; no definition.)
The position of the genus is doubtful.

Dictyorhabdus priscus Walcott.

Walcott, C. D. 1892 A, p. 165, pl. iii, figs. 1-5.
Amer. Geologist 1891 E. (Palæchimæra prisca; no description.)
Cope, E. D. 1893 I.
Dana, J. D. 1896 A, p. 509, fig. 697.
Silurian (Ordovician); Colorado.

MYLEDAPHUS Cope. Type *M. bipartitus* Cope.

Cope, E. D. 1876 H, p. 260.

Myledaphus bipartitus Cope.

Cope, E. D. 1876 H, p. 260.
1877 G, p. 574.
Cretaceous (Fort Union); Montana.
The relationships of this fossil are doubtful.

HEDRONCHUS Cope. Type *H. sternbergi* Cope.

Cope, E. D. 1876 H, p. 259.

Hedronchus sternbergi Cope.

Cope, E. D. 1876 H, p. 259.
1877 G, p. 574.
1880 Q.
Cretaceous (Ft. Union); Montana.
The relationships of this fossil are extremely problematical.

ICHTHYODORULITES.

Agassiz, L. 1843 B, iii, pp. 1, 67, 69, 212.
1844 B, p. 111.
Hay, O. P. 1899 F, p. 682.
Jaekel, O. 1890 D.
Koninck, L. G. de 1878 A, p. 65.
Newberry and Worthen 1866 A, pp. 113-127.
Pictet, F. J. 1854 A, p. 229.
St. John and Worthen 1875 A, pp. 420-488
1883 A, pp. 233-260.
Woodward, A. S. 1891 A, pp. 92-159.
Zittel, K. A. 1890 A, pp. 115-122.

ONCHUS Agassiz. Type *O. murchisoni* Agassiz.

Agassiz, L. 1843 B (1837), iii, p. 6.
1843 A.
1844 A.
1844 B, p. 117.
Eichwald E. 1860 A, p. 1594.
Hasse, C. 1878 A, p. 144.
1879 A, p. 59.
McCoy, F. 1855 A, p. 577.
Nicholson and Lydekker 1889 A, p. 940.
Owen, R. 1860 E, p. 100.
Pictet, F. J. 1854 A, p. 283.
Reis, O. M. 1896 A.
Rohon, V. 1893 A, p. 38, with figures.
1899 A, p. 9.
Traquair, R. H. 1899 A, p. 843.
Woodward, A. S. 1891 A, p. 94.
Zittel, K. A. 1890 A, pp. 64, 67, 166.

Onchus clintoni Claypole.

Claypole, E. W. 1885 D, p. 61, fig. 6.
1884 A, p. 1225. (No description).
1895 G.
Lesley, J. P. 1892 A, p. 774.
Woodward, A. S. 1891 A, p. 96.
Zittel, K. A. 1890 A, p. 317. (O. clintonensis.)
Silurian (Clinton); Pennsylvania.

Onchus pennsylvanicus Claypole.

Claypole, E. W. 1885 D, p. 61, fig. 5.
1885 A, p. 426.
1885 C.
Lesley, J. P. 1892 A, p. 774.
Upper Silurian; Pennsylvania.

Onchus rectus Eastman.

Eastman, C. R. 1899 F, p. 323, fig. 4.
Devonian (Catskill); New York.

CTENACANTHUS Agassiz. Type *C. major* Agassiz.

Agassiz, L. 1843 B (1837), iii, p. 10.
1843 A.
1844 A.
1844 B, p. 119.
American Geologist 1888 A.
Barkas, W. J. 1874 A, p. 386.
1878 B, p. 145.
Claypole, E. W. 1885 B.
1895 C.
Davis, J. W. 1883 A, p. 332.
Garman, S. 1884 C.
Gill, T. 1884 C.
McCoy, F. 1855 A, p. 624.
Koninck L. G. de 1878 A, p. 65.
Miller, S. A. 1889 A, p. 593.
Newberry, J. S. 1873 A, pp. 279, 325.
1873 C, p. 27.
1889 A, p. 197.
Newberry and Worthen 1866 A, pp. 116, 118.
Nicholson and Lydekker 1889 A, pp. 940, 968.
Pictet, F. J. 1854 A, p. 290.
St. John and Worthen 1875 A, p. 432.
Thompson J. 1870 A.
1871 A.
Traquair, R. H. 1884 B.
1888 A, p. 81.
Woodward, A. S. 1884 A, p. 267.
1891 A, p. 97.

Woodward and Sherborn 1890 A, p. 49.
Zittel, K. A. 1890 A, pp. 67, 116.

Ctenacanthus acutus Eastman.

Eastman, C. R. 1897 B, p. 12, fig. 2.
Subcarboniferous (Keokuk); Iowa.

Ctenacanthus amblyxiphias Cope.

Cope, E. D. 1891 B, p. 449, pl. xxviii, fig. 3.
Permian; Texas.

Ctenacanthus angulatus Newb. and Worth.

Newberry and Worthen 1866 A, p. 118, pl. xii, figs. 4, 4*a*.
Woodward, A. S. 1891 A, p. 102.
Subcarboniferous (Chester); Illinois.

Ctenacanthus angustus Newb.

Newberry, J. S. 1889 A, p. 181.
Claypole, E. W. 1896 E, p. 151, figs. 1, 2.
Woodward, A. S. 1891 A, p. 102.
Devonian (Cleveland shale); Ohio.

Ctenacanthus burlingtonensis St. J. and Worth.

St. John and Worthen 1875 A, p. 426, pl. xv, figs. 6, 7.
Woodward, A. S. 1891 A, p. 102.
Subcarboniferous (Burlington); Iowa, Illinois.

Ctenacanthus buttersi St. J. and Worth.

St. John and Worthen 1883 A, p. 241, pl. xxvi, fig. 2.
Woodward, A. S. 1891 A, p. 102.
Coal-measures; Illinois.

Ctenacanthus cannaliratus St. J. and Worth.

St. John and Worthen 1883 A, p. 239, pl. xxi, fig. 3.
Woodward, A. S. 1891 A, p. 102.
Subcarboniferous (Chester); Illinois.

Ctenacanthus chemungensis Claypole.

Claypole, E. W. 1885 B, p. 490. (Inadequate description.)
Devonian (Chemung); Pennsylvania.

Ctenacanthus clarkii Newb.

Newberry, J. S. 1889 A, p. 168, pl. xxvi, figs. 2, 3.
Woodward, A. S. 1891 A, p. 102.
Devonian (Cleveland shale); Ohio.

Ctenacanthus compressus Newb.

Newberry, J. S. 1878 A, p. 191.
1889 A, p. 168, pl. xxiii, fig. 4.
Woodward, A. S. 1891 A, p. 103.
Devonian (Cleveland shale); Ohio.

Ctenacanthus coxianus St. J. and Worth.

St. John and Worthen 1883 A, p. 233, pl. xxi, fig. 1.
Eastman, C. R. 1897 B, p. 13.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (Keokuk); Iowa.

Ctenacanthus cylindricus Newb.

Newberry, J. S. 1889 A, p. 202, pl. xxxvi, fig. 1.
Eastman, C. R. 1897 B, p. 13.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (Keokuk); Kentucky.

Ctenacanthus deflexus St. J. and Worth.

St. John and Worthen 1883 A, p. 234 pl. xxii, fig. 1.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (St. Louis); Illinois.

Ctenacanthus depressus Newb.

Newberry, J. S. 1897 A, p. 290, pl. xxii, fig. 6.
Subcarboniferous (Kinderhook); Iowa.

Ctenacanthus elegans Tuomey.

Tuomey, M. 1858 A, p. 38, text-fig. A.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous; Alabama.

Ctenacanthus excavatus St. J. and Worth.

St. John and Worthen 1875 A, p. 428, pl. xv, figs. 4, 5.
Eastman, C. R. 1897 B, p. 13.
Keyes, C. R. 1894 A, p. 236.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (Keokuk); Missouri, Iowa.

Ctenacanthus? fallax Woodward.

Woodward, A. S. 1891 A, p. 105. (Ex Leidy MS. "Indeterminate.")
Leidy J. 1857 G, pl. v. fig. 30. (No name or description).
Subcarboniferous; ———.

Ctenacanthus formosus Newb.

Newberry, J. S. 1873 A, p. 328, pl. 36, figs. 2-2*b*.
1875 A, p. 53, pl. lix, figs. 1-1*e*.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (Waverly); Ohio, Kentucky.

Ctenacanthus furcicarinatus Newb.

Newberry, J. S. 1875 A, p. 54, pl. lix, figs. 2-2*e*.
Koninck, L. G. de 1878, A, p. 68.
Newberry, J. S. 1873 A, p. 279. (No description; teeth =? Orodus variabilis.)
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (Waverly); Kentucky.

Ctenacanthus gemmatus St. J. and Worth.

St. John and Worthen 1875 A, p. 429, pl. xv, figs. 9, 10.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (St. Louis); Illinois.

Ctenacanthus gradocostatus St. J. and Worth.

St. John and Worthen 1875 A, p. 425, pl. xv, figs. 2, 3.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (Burlington); Illinois, Iowa.

Ctenacanthus gurleyi Newb.

Newberry, J. S. 1897 A, p. 290.
Subcarboniferous (St. Louis); Indiana.

Ctenacanthus harrisoni St. J. and Worth.

St. John and Worthen 1883 A, p. 236, pl. xxiii, fig. 1.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (St. Louis); Illinois.

Ctenacanthus keokuk St. J. and Worth.

St. John and Worthen 1875 A, p. 427, pl. xv, fig. 8.
Eastman, C. R. 1897 B, p. 13.
Keyes, C. R. 1894 A, p. 236.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (Keokuk); Missouri, Illinois, Iowa.

Ctenacanthus littoni Newb.

Newberry, J. S. 1889 A, p. 201, pl. xxv, fig. 3.
Woodward, A. S. 1891 A, p. 103.
Subcarboniferous (St. Louis); Missouri.

Ctenacanthus marshii Newb.

Newberry, J. S. 1873 A, p. 326, pl. xxvi, figs. 3, 3*b*.
Woodward, A. S. 1891 A, p. 104.
Coal-measures; Ohio.

Ctenacanthus mayi Newb. and Worth.

Newberry and Worthen 1870 A, p. 372, pl. ii, figs. 2, 2*a*; also p. 346.
Woodward, A. S. 1891 A, p. 104.
Subcarboniferous (Burlington); Iowa.

Ctenacanthus pellensis St. J. and Worth.

St. John and Worthen 1883 A, p. 237, pl. xxi, fig. 2.
Woodward, A. S. 1891 A, p. 104.
Subcarboniferous (St. Louis); Iowa.

Ctenacanthus pugiunculus St. J. and Worth.

St. John and Worthen 1875 A, p. 430, pl. xxi, fig. 9.
Keyes, C. R. 1894 A, p. 236.
Newberry, J. S. 1897 A, p. 288, pl. xxii, fig. 4. (Oracanthus.)
Woodward, A. S. 1891 A, p. 104.
Subcarboniferous (St. Louis); Missouri, Illinois.

Ctenacanthus randalli Newb.

Newberry, J. S. 1889 A, p. 105.
Woodward, A. S. 1891 A, p. 104.
Devonian (Chemung); Pennsylvania.

Ctenacanthus sculptus St. J. and Worth.

St. John and Worthen 1875 A, p. 421, pl. xiv, fig. 1.
Woodward, A. S. 1891 A, p. 104.
Subcarboniferous (Kinderhook); Iowa.

Ctenacanthus similis St. J. and Worth.

St. John and Worthen 1875 A, p. 431, pl. xv, figs. 11-11*d*.
Woodward, A. S. 1891 A, p. 104.
Subcarboniferous (Chester); Illinois.

Ctenacanthus speciosus St. J. and Worth.

St. John and Worthen 1875 A, p. 424, pl. xiv, figs. 3, 4.
Davis, J. W. 1883 A, p. 340.
Woodward, A. S. 1891 A, p. 104.
Subcarboniferous (Kinderhook); Iowa.

Ctenacanthus spectabilis St. J. and Worth.

St. John and Worthen 1875 A, p. 420, pl. xv, figs. 1-1*e*.
Woodward, A. S. 1891 A, p. 104.
Subcarboniferous (Kinderhook); Iowa.

Ctenacanthus triangularis Newb.

Newberry, J. S. 1873 A, p. 329, pl. 36, figs. 1-1*b*.
Miller, S. A. 1889 A, p. 593, fig. 1118.
Trautschold, H. 1879 B, p. 61, pl. vii, fig. 15.
Woodward, A. S. 1891 A, p. 104.
Subcarboniferous (Waverly); Ohio; also in Russia.

Ctenacanthus varians St. J. and Worth.

St. John and Worthen 1875 A, p. 422, pl. xiv, fig. 12.
Woodward, A. S. 1891 A, p. 104.
Subcarboniferous (Kinderhook); Iowa.

Ctenacanthus vetustus Newb.

Newberry, J. S. 1873 A, p. 326, pl. xxxv, figs. 3-3*d*.
Claypole, E. W. 1885 B, p. 489.
Woodward, A. S. 1891 A, p. 104.
Devonian (Huron shale); Ohio.

Ctenacanthus wrighti Newb.

Newberry, J. S. 1884 B, p. 206, pl. xvi, figs. 12-14.
1889 A, p. 66, pl. xxvi, fig. 4.
Woodward, A. S. 1891 A, p. 104.
Devonian (Hamilton); New York.

Ctenacanthus xiphias (St. J. and Worth.).

St. John and Worthen 1883 A, p. 244, pl. xxvi, fig. 1. (Acondylacanthus.)
Eastman, C. R. 1897 B, p. 10, fig. 1.
Woodward, A. S. 1891 A, p. 110. (Acondylacanthus.)
Subcarboniferous (Keokuk); Iowa.

ANACLITACANTHUS St. J. and Worth. Type *A. semicostatus* St. J. and Worth.

St. John and Worthen 1875 A, p. 442.
Miller, S. A. 1889 A, p. 587.

Anaclitacanthus semicostatus St. J. and Worth.

St. John and Worthen 1875 A, p. 443, pl. xvi, fig. 14.
Woodward, A. S. 1891 A, p. 105.
Subcarboniferous (Burlington); Iowa.

EUNEMACANTHUS St. J. and Worth. Type *E. costatus* (Newb. and Worth.).

St. John and Worthen 1883 A, p. 246.
Miller, S. A. 1889 A, p. 597.

Eunemacanthus costatus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 120, pl. xii, fig. 5. (Ctenacanthus? costatus.)
Hambach, G. 1890 A, p. 80.
St. John and Worthen 1883 A, p. 246, pl. xxiii, fig. 2.
Woodward, A. S. 1891 A, p. 105.
Subcarboniferous (St. Louis); Illinois, Missouri (*fide* Hambach).

HOMACANTHUS Agassiz. Type *H. arcuatus* Agassiz.

Agassiz, L. 1844 B. p. 113.
Newberry and Worthen 1866 A, p. 113.
Nicholson and Lydekker 1889 A, p. 968.
Owen, R. 1860 E, p. 101.
Pictet, F. J. 1854 A, p. 288.
Woodward, A. S. 1891 A, p. 105.

Homacanthus gracilis Whiteaves.

Whiteaves, J. F. 1889 A, p. 96, pl. x, fig. 4.
McCoy, F. 1855 A, p. 682.
Traquair, R. H. 1890 A, p. 21. (Climatius.)
Whiteaves, J. F. 1881 E, p. 106. (H. sp. undet.)
1883 A, p. 355. (H. sp.?.)
1883 B, p. 164. (H. sp. undet.)
Woodward, A. S. 1891 A, p. 106.
Lower Devonian; New Brunswick.

AMACANTHUS St. J. and Worth. Type *A. gibbosus* (Newb. and Worth.).

St. John and Worthen 1875 A, p. 464.
Miller, S. A. 1889 A, p. 587.

Amacanthus gibbosus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 113, pl. xii, fig. 1. (Homacanthus.)
Keyes, C. R. 1894 A, p. 237.
Miller, S. A. 1889 A, p. 587.
St. John and Worthen 1875 A, p. 464, pl. xxii, fig. 6.
Woodward, A. S. 1891 A, p. 106.
Subcarboniferous (St. Louis); Missouri, Illinois.

MARRACANTHUS St. J. and Worth. Type *M. rectus* (Newb. and Worth.).

St. John and Worthen 1875 A, p. 465.
Keyes, C. R. 1894 A, p. 237.
Miller, S. A. 1889 A, p. 601.

Marracanthus rectus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 115, pl. xii, fig. 6. (Homacanthus ?)
Miller, S. A. 1889 A, p. 602, fig. 1147.
St. John and Worthen 1875 A, p. 466, pl. xxii, figs. 7–9.
Woodward, A. S. 1891 A, p. 106.
Subcarboniferous (St. Louis); Missouri, Illinois.

HOPLONCHUS J. W. Davis. Type *H. elegans* J. W. Davis.

Davis, J. W. 1876, Quart. Jour. Geol. Soc., xxxii, p. 336.
1879, Quart. Jour. Geol. Soc., xxxv, p. 181.
Newberry, J. S. 1889 A, p. 169.
Woodward, A. S. 1891 A, p. 107.

Hoplonchus parvulus Newb.

Newberry, J. S. 1875 A, p. 55, pl. lix, fig. 3. (Ctenacanthus.)
1889 A, p. 169, pl. xxv, fig. 5.
Woodward, A. S, 1891 A, p. 107.
Devonian (Cleveland shale); Ohio.

ACONDYLACANTHUS St. J. and Worth. Type *A. gracilis* St. J. and Worth.

St. John and Worthen 1875 A, p. 432.
Davis, J. W. 1883 A, p. 346.
Miller, S. A. 1889 A, p. 586.
Woodward, A. S. 1886 E, p. 4.
1891 A, p. 107.
Woodward and Sherborn 1890 A, p. 4.
Zittel, K. A. 1890 A, p. 117.

Acondylacanthus æquicostatus St. J. and Worth.

St. John and Worthen 1875 A, p. 434, pl. xvi, figs 12, 13.
Woodward, A. S. 1891 A, p. 109.
Subcarboniferous (Keokuk); Iowa.

Acondylacanthus gracilis St. J. and Worth.

St. John and Worthen 1875 A, p. 433, pl. xvi, figs. 8–11.
Miller, S. A. 1889 A, p. 586, fig. 1099.
Woodward, A. S. 1891 A, p. 109.
Subcarboniferous (Kinderhook); Iowa.

Acondylacanthus gracillimus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 126, pl. xiii, fig. 8. (Ctenacanthus.)
Keyes, C. R. 1894 A, p. 236. (Ctenacanthus.)

Newberry, J. S. 1889 A, p. 206, pl. xxv, fig. 6. (A. occidentalis.)
Newberry and Worthen 1866 A, p. 116, pl. xii, fig. 2. (Leptacanthus? occidentalis.)
St. John and Worthen 1875 A, p. 435. (A. occidentalis.)
1883 A, p. 238, pl. xxiv, fig. 1. (Ctenacanthus.)
Woodward, A. S. 1891 A, p. 109. (A. occidentalis.)
Subcarboniferous (St. Louis); Missouri, Illinois, Michigan.

Acondylacanthus? mudgianus St. J. and Worth.

St. John and Worthen, 1883 A, p. 244, pl. xxiv, fig. 3.
Woodward, A. S. 1891 A, p. 110.
Coal-measures; Kansas.

Acondylacanthus nuperus St. J. and Worth.

St. John and Worthen 1883 A, p. 242, pl. xxvi, fig. 3.
Woodward, A. S. 1891 A, p. 110.
Coal-measures; Illinois.

Acondylacanthus rectus St. J. and Worth.

St. John and Worthen 1883 A, p. 241, pl. xxvi, fig. 2
Woodward, A. S. 1891 A, p. 109.
Coal-measures; Illinois.

ASTEROPTYCHIUS McCoy. Type *A. ornatus* McCoy.

McCoy, F. 1848 A, p. 118.
Agassiz, L. 1843 B, iii, p. 176. (Name only).
1844 A.
McCoy, F. 1855 A, p. 615.
Miller, S. A. 1889 A, p. 588.
Newberry, J. S. 1889 A, p. 186.
Woodward, A. S. 1891 A, p. 110.
Zittel, K. A. 1890 A, p. 117.

Asteroptychius bellulus St. J. and Worth.

St. John and Worthen 1875 A, p. 439, pl. xvi, fig. 7.
Woodward, A. S. 1891 A, p. 111.
Coal-measures: Illinois, Iowa.

Asteroptychius elegans Newb.

Newberry, J. S. 1889 A, p. 176, pl. xxv, fig. 4.
Woodward, A. S. 1891 A, p. 111.
Subcarboniferous (Waverly); Michigan.

Asteroptychius gracilis Newb.

Newberry, J. S. 1897 A, p. 293.
Subcarboniferous (St. Louis); Illinois.

Asteroptychius keokuk St. J. and Worth.

St. John and Worthen 1875 A, p. 436, pl. xvi, fig. 2.
Woodward, A. S. 1891 A, p. 111.
Subcarboniferous (Keokuk); Illinois.

Asteroptychius sancti-ludovici St. J. and Worth.

St. John and Worthen 1875 A, p. 437, pl. xvi, figs. 3, 4.
Keyes, C. R. 1894 A, p. 236.
Woodward, A. S. 1891 A, p. 111.
Subcarboniferous (St. Louis); Illinois, Missouri.

Asteroptychius tenellus St. J. and Worth.

St. John and Worthen 1883 A, p. 248, pl. xxi, fig. 4.
Woodward, A. S. 1891 A, p. 111.
Coal-measures: Kansas.

Asteroptychius ? tenuis St. J. and Worth.

St. John and Worthen 1875 A, p. 438, pl. xvi, figs. 5, 6.
Woodward, A. S. 1891 A, p. 111.
Subcarboniferous (Chester); Illinois.

Asteroptychius triangularis Newb. and Worth.

Newberry and Worthen 1870 A, p. 370, pl. ii, fig. 4.
Woodward, A. S. 1891 A, p. 111.
Subcarboniferous (Burlington): Iowa.

Asteroptychius vetustus St. J. and Worth.

St. John and Worthen 1875 A, p. 435, pl. xvi, fig. 1.
Woodward, A. S. 1891 A, p. 111.
Subcarboniferous (Kinderhook); Iowa.

COSMACANTHUS Agassiz. Type *C. malcolmsoni* Agassiz.

Agassiz, L. 1844 B, p. 120.
Miller, S. A. 1889 A, p. 598. (Gisacanthus.)
Pictet, F. J. 1854 A, p. 287.
St. John and Worthen 1875 A, p. 440. (Geisacanthus, type *G. stellatus*.)
Woodward, A. S. 1891 A, p. 111.
Woodward and Sherborn 1890 A, p. 47.
Zittel, K. A. 1890 A, p. 117.

Cosmacanthus bullatus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 441, pl. xvii, figs. 3, 4. (Geisacanthus.)
Woodward, A. S. 1891 A, p. 112.
Subcarboniferous (Chester); Illinois.

Cosmacanthus stellatus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 440, pl. xxi, fig. 10. (Geisacanthus.)
Keyes, C. R. 1894 A, p. 236. (Geisacanthus.)
Woodward, A. S. 1891 A, p. 113.
Subcarboniferous (St. Louis); Missouri.

BYTHIACANTHUS St. J. and Worth. Type *B. vanhornei* St. J. and Worth.

St. John and Worthen 1875 A, p. 444.
Miller, S. A. 1889 A, p. 589.
Newberry, J. S. 1889 A, p. 186.
Woodward, A. S. 1889 D, p. 320.
1891 A, p. 113.
Subcarboniferous; Tennessee.

Bythiacanthus ? siderius (Leidy).

Leidy, J. 1870 H, p. 13. (Asteracanthus.) 1873 B, pp. 313, 353, pl. xxxii, fig. 59. (Asteracanthus.)
St. John and Worthen 1875 A, p. 445.

Bythiacanthus vanhornei St. J. and Worth.

St. John and Worthen 1875 A, p. 445, pl. xvii, fig. 1.
Woodward, A. S. 1891 A, p. 113.
Subcarboniferous (St. Louis); Illinois.

GLYMMATACANTHUS St. J. and Worth. Type *G. irishii* St. J. and Worth.

St. John and Worthen 1875 A, p. 446.
Miller, S. A. 1889 A, p. 598.
Newberry, J. S. 1889 A, p. 186.

Glymmatacanthus irishii St. J. and Worth.

St. John and Worthen 1875 A, p. 447, pl. xvii, fig. 2.
Miller, S. A. 1889 A, p. 596, fig. 1133.
Woodward, A. S. 1891 A, p. 113.
Subcarboniferous (Kinderhook); Iowa.

Glymmatacanthus petrodoides St. J. and Worth.

St. John and Worthen 1883 A, p. 250, pl. xxv. fig. 2.
Woodward, A. S. 1891 A, p. 113.
Subcarboniferous (Chester); Illinois.

Glymmatacanthus rudis St. J. and Worth.

St. John and Worthen 1883 A, p. 249, pl. xxv, fig. 1.
Woodward, A. S, 1891 A, p. 113.
Subcarboniferous (Keokuk); Iowa.

APATEACANTHUS Woodward. Type *A. vetustus* (Clarke).

Woodward, A. S. 1891 A, p. 118.

Apateacanthus vetustus (Clarke, J. M.).

Clarke, J. M. 1885 A, p. 42, pl. i, fig. 7. (Pristacanthus.)
Lesley, J. P., 1889 A, p. 744, figure. (Pristacanthus.)
Newberry, J. S. 1889 A, p. 61.
Woodward, A. S. 1891 A, p. 119.
Devonian (Genesee); New York.

CŒLORHYNCHUS Agassiz. Type *C. rectus* Agassiz.

Agassiz, L. 1843 B, v. p. 92.
1844 A.
Cope, E. D. 1890 A.
Gibbes, R. W. 1850 A.
Leidy, J. 1856 A, p. 422. (Cylindracanthus.)
1856 E, p. 12. (Cylindracanthus; type *C. ornatus*.)
Marsh, O. C. 1870 E. p. 228.
Reis, O. M. 1895 C. p. 182.
Williamson, W. C. 1849 A, p. 471, pl. xliii, figs. 35–37.
Woodward, A. S. 1888 G.
1891 A, p. 120.
Zittel, K. A. 1890 A, pp. 122, 258.
This genus probably belongs to the *Sclerodermi*.

Cœlorhynchus acus Cope.

Cope, E. D. 1870 F, p. 294.
Eocene; New Jersey.

Cœlorhynchus ornatus Leidy.

Leidy, J. 1856 E, p. 12. (Cylindracanthus.)
1856 A, p. 422. (Cylindracanthus.)
1856 O, p. 302. (Cœlorhynchus.)
Woodward, A. S. 1891 A, p. 122.
Eocene; Alabama.

MACHÆRACANTHUS Newb. Type *M. peracutus* Newb.

Newberry, J. S. 1857 C, p. 125.
Fritsch, A. 1895 A (1893), p. 72.
Hopkins, W., 1855 A. (No name.)
Jaekel, O. 1893 B, p. 175.
Miller, S. A. 1889 A, p. 601.
Newberry, J. S. 1857 A, p. 148.
1862 A, p. 76, fig. 2.
1873 A, pp. 261, 302.
1873 C, p. 27.
1875 A, p. 57.
1889 A, p. 37.
Nicholson and Lydekker 1889 A, p. 947.
Reis, O. M. 1896 A.
Roualt, M. 1858 A, p. 102. (Machærius, preoccupied.)
Traquair, R. H. 1893 B, p. 177.
Woodward, A. S. 1891 A, p. 123.
Zittel, K. A. 1890 A, p. 116.

Machæracanthus major Newb.

Newberry, J. S. 1857 C, p. 125.
Lesley, J. P 1892 A, pl. cl.

Newberry, J. S. 1873, A, pp. 262, 304, pl. xxv, fig. 2.
1889 A, p. 39, pl. xxix, fig. 4.
Woodward, A. S. 1891 A, p. 124.
Zittel, K. A. 1890 A, p. 116, fig. 124.
Devonian (Corniferous); Ohio.

Machæracanthus peracutus Newb.

Newberry, J. S. 1857 C, p. 125.
Hopkins, W. 1854 A. (No name).
Miller, S. A. 1889 A, p. 601, fig. 1145.
Newberry, J. S. 1862 A, fig. 2.
1873 A, p. 305, pl. xxix, fig. 6.
1889 A, p. 40, pl. xxix, fig. 6.
Woodward, A. S. 1891 A, p. 124.
Devonian (Corniferous); Ohio.

Machæracanthus sulcatus Newb.

Newberry, J. S. 1857 C, p. 126.
Hall, J. 1843 A, p. 174, fig. 69. ("Ichthyodorulite.")
Jaekel, O. 1893 B, p. 175.
Lankester, E. R. 1870 A, fig. 3.
Lennox, T. H 1886 A, p. 120.
Lesley, J. P. 1889 A, p. 298, figure. ("Ichthyodorulite.")
Newberry, J. S. 1873 A, pp. 264, 305.
1889 A, p. 40, pl. xxix, fig. 4.
Woodward, A. S. 1891 A, p. 124.
Devonian (Corniferous); Ohio.

GAMPHACANTHUS S. A. Miller. Type *H. politus* Newb.

Miller, S. A. 1892 A, p. 715.
Hay, O. P. 1899 E, p. 791.
Newberry, J. S. 1889 A, p. 65. (Heteracanthus, type *H. politus;* preoccupied.)
Woodward, A. S. 1891 A, p. 125. (Heteracanthus.)

Gamphacanthus politus (Newb.).

Newberry, J. S. 1889 A, p. 66, pl. xxi, figs. 4, 5. (Heteracanthus.)
Eastman, C. R. 1898 B, p. 552. (Heteracanthus.)
1899 B, p. 282. (Heteracanthus.)
Miller, S. A. 1892 A, p. 715.
Woodward, A. S. 1891 A, p. 125. (Heteracanthus.)
Devonian (Hamilton); Wisconsin.

Gamphacanthus uddeni (Lindahl).

Lindahl, J. 1897 A, p. 95, pl. vi. (Heteracanthus.)
Eastman, C. R. 1898 B, p. 557. (Heteracanthus.)
1899 B, pp. 278, 282. (Heteracanthus.)
Devonian (Hamilton); Iowa, Wisconsin, Illinois.

ACANTHASPIS Newb. Type *A. armatus* Newb.

Newberry, J. S. 1875 A, p. 36.
Jaekel, O. 1893 B, p. 175.
Miller, S. A. 1889 A, p. 586.
Newberry, J. S. 1870 B, p. 153.
1889 A, p. 35.
Traquair, R. H. 1893 A, p. 149.
1893 D, p. 117.
1894 B, p. 370.
Woodward, A. S. 1891 A, p. 128.
1892 C, p. 482.
1892 F, fig. 8.
Woodward, A. S. 1898 B, p. 16.
Zittel, K. A. 1890 A, p. 157.

Acanthaspis armata Newb.

Newberry, J. S. 1875 A, p. 37, pl. lv, figs. 1–6.
Claypole, E. W. 1896 B, p. 354.
Miller, S. A. 1889 A, p. 586, fig. 1097.
Newberry, J. S. 1889 A, p. 36, pl. xxxi; figs. 1–4.
Traquair, R. H. 1894 B, p. 370.
Woodward, A. S. 1891 A, p. 129.
Devonian (Corniferous); Ohio.

ECZEMATOLEPIS S. A. Miller. Type *Acantholepis pustulosus* (Newb.).

Miller, S. A. 1892 A, p. 715.
Hay, O. P. 1899 E, p. 791.
Jaekel, O, 1893 B, p. 175. (Acantholepis.)
Miller, S. A. 1889 A, p. 586. (Acantholepis.)
Newberry, J. S. 1875 A, p. 38. (Acantholepis, type *A. pustulosus;* preoccupied.)
1889 A, p. 33. (Acantholepis.)
Woodward, A. S. 1891 A, p. 128. (Acantholepis.)
Zittel, K. A. 1890 A, p. 157. (Acantholepis.)

Eczematolepis fragilis (Newb.).

Newberry, J. S. 1857 C, p. 126. (Oracanthus fragilis, O. granulatus, O. abbreviatus.)
Eastman, C. R. 1899 B, p. 283. (Acantholepis.)
Miller, S. A. 1889 A, p. 586, fig. 1098. (Acantholepis.)
1892 A, p. 715. (Eczematolepis.)
Newberry, J. S. 1875 A, p. 38, pl. lvi, figs. 1–6. (Acantholepis pustulosus.)
1875 A, p. 39. (Oracanthus fragilis, granulatus, abbreviatus.)
1889 A, p. 34, pl. xxxi, figs. 5–5*b*. (Acantholepis pustulosus.)
Woodward, A. S. 1891 A, p. 129. (Acantholepis pustulosus.)
Devonian (Corniferous); Ohio, New York.

PHLYCTÆNACANTHUS Eastman. Type *P. telleri* Eastman.

Eastman, C. R. 1898 B, p. 552.

Phlyctænacanthus telleri Eastman.

Eastman, C. R. 1898 B, p. 551, fig. 49.
1899 B, p. 283.
Devonian (Hamilton); Wisconsin, Iowa.

STETHACANTHUS Newb. Type *S. altonensis* (St. J. and Worth.).

Newberry, J. S. 1889 A, p. 198.
Miller, S. A. 1892 A, p. 717.
Woodward, A. S. 1891 A, p. 129.

Stethacanthus altonensis (St. J. and Worth).

St. John and Worthen 1875 A, p. 454, pl. xix, figs. 1-3. (Physonemus.)
Lesley, J. P. 1889 A, p. 641, figures. (Physonemus.) 1890 A, p. 1062.
Newberry, J. S. 1889 A, p. 198, pl. xxiv, figs. 1-3. 1890 A, p. 133.
Woodward, A. S. 1891 A, p. 129.
Subcarboniferous (St. Louis); Illinois.

Stethacanthus compressus Newb.

Newberry, J. S. 1897 A, p. 292, pl. xxiii, figs. 3, 4.
Subcarboniferous (Burlington); Iowa.

Stethacanthus productus Newb.

Newberry, J. S. 1897 A, p. 291, pl. xxiii, figs. 1, 2.
Subcarboniferous (Burlington); Iowa.

Stethacanthus tumidus Newb.

Newberry, J. S. 1889 A, pp. 198, 200, pl. xxv, figs. 1, 2.
Lesley, J. P. 1890 A, p. 1063.
Woodward, A. S. 1891 A, p. 129.
Devonian (Cleveland shale); Ohio, Pennsylvania?.

PHYSONEMUS McCoy. Type *P. arcuatus* McCoy.

McCoy, F. 1848 A, p. 117.
Davis, J. W. 1883 A, p. 368.
McCoy, F. 1855 A, p. 638.
Miller, S. A. 1889 A, p. 606.
Newberry, J. S. 1889 A, p. 195. 1890 A, p. 133.
Pictet, F. J. 1854 A, p. 291.
St. John and Worthen 1875 A, p. 448.
Woodward, A. S. 1891 A, p. 130.
Zittel, K. A. 1890 A, p. 118.

Physonemus carinatus St. J. and Worth.

St. John and Worthen 1875 A, p. 452, pl. xviii, figs. 4, 5.
Woodward, A. S. 1891 A, p. 131.
Subcarboniferous (Kinderhook); Iowa.

Physonemus chesterensis St. J. and Worth.

St. John and Worthen 1875 A, p. 455, pl. xix, fig. 4.
Lesley, J. P. 1889 A, p. 642, figure.
Woodward, A. S. 1891 A, p. 131.
Subcarboniferous (Chester); Illinois.

Physonemus depressus St. J. and Worth.

St. John and Worthen 1875 A, p. 452, pl. xviii, fig. 3.
Lesley, J. P. 1889 A, p. 642, figures.
Woodward, A. S. 1891 A, p. 131.
Subcarboniferous (Kinderhook); Iowa.

Physonemus falcatus St. J. and Worth.

St. John and Worthen 1883 A, p. 252, pl. xxiv, fig. 6.
Keyes, C. R. 1894 A, p. 237.
Lesley, J. P. 1889 A, p. 643, figure.
Woodward, A. S. 1891 A, p. 131.
Subcarboniferous (St. Louis); Missouri.

Physonemus gigas Newb. and Worth.

Newberry and Worthen 1870 A, p. 373, pl. ii, fig. 1.
Davis, J. W. 1883 A, p. 368.
Lesley, J. P. 1889 A, p. 643, figures.
Newberry, J. S. 1889 A, p. 195.
St. John and Worthen 1875 A, p. 449.
Woodward, A. S. 1891 A, p. 132.
Subcarboniferous (Burlington); Illinois.

Physonemus parvulus St. J. and Worth.

St. John and Worthen 1875 A, p. 453, pl. xviii, figs. 11, 12.
Keyes, C. R. 1894 A, p. 237.
Lesley, J. P. 1889 A, p. 643, figures.
Woodward, A. S. 1891 A, p. 132.
Subcarboniferous (Keokuk); Missouri, Illinois.

Physonemus proclivus St. J. and Worth.

St. John and Worthen 1875 A, p. 451, pl. xviii, figs. 1, 2.
Lesley, J. P. 1889 A, p. 644, figures.
Woodward, A. S. 1891 A, p. 132.
Subcarboniferous (Kinderhook); Iowa.

Physonemus stellatus Newb.

Newberry, J. S. 1889 A, p. 200, pl. xxi, fig. 12.
Woodward, A. S. 1891 A, p. 132.
Subcarboniferous (St. Louis); Indiana.

XYSTRACANTHUS Leidy. Type *X. arcuatus* Leidy.

Leidy, J. 1859 C, p. 3.
Koninck, L. G. de 1878 A, p. 75. (Drepanacanthus.)
Jaekel, O. 1899 A, p. 285.
Lohest, M. 1884 A, p. 319.
Miller, S. A. 1889 A, p. 596 (Drepanacanthus); p. 614 (Xystracanthus).
Newberry, J. S. 1889 A, p. 195. (Drepanacanthus.)
Newberry and Worthen 1866 A, p. 120. (Drepanacanthus; type *D. anceps*, Newb. and Worth.)
St. John and Worthen 1875 A, p. 457.
Trautschold, H. 1874 B, p. 297. (Drepanacanthus.)

Xystracanthus acinaciformis St. J. and Worth.

St. John and Worthen 1875 A, p. 459, pl. xx, fig. 2.
Lesley, J. P. 1890 A, p. 1262, figure.
Woodward, A. S. 1891 A, p. 131. (Physonemus.)
Coal-measures; Illinois.

Xystracanthus anceps (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 122, pl. xii, fig. 8. (Drepanacanthus.)
Lesley, J. P. 1890 A, p. 1262, figure.
St. John and Worthen 1875 A, p. 458. (Xystracanthus.)
Woodward, A. S. 1891 A, p. 131. (Physonemus.)
Coal-measures; Illinois.

Xystracanthus arcuatus Leidy.

Leidy, J. 1859 C, p. 3.
1873 B, pp. 312, 353, pl. xvii, fig. 25.
St. John and Worthen 1875 A, p. 457.
Woodward, A. S. 1891 A, p. 131. (Physonemus.)
Coal Measures; Kansas.

Xystracanthus gemmatus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 123, pl. xiii, fig. 1. (Drepanacanthus.)
Woodward, A. S. 1891 A, p. 132. (Physonemus.)
Subcarboniferous (Keokuk); Iowa.

Xystracanthus mirabilis St. J. and Worth.

St. John and Worthen 1875 A, p. 458, pl. xx, fig. 1.
Lesley, J. P. 1890 A, p. 1264, figure.
1895 A, pl. dlxxii.
Woodward, A. S. 1891 A, p. 132. (Physonemus.)
Coal-measures; Illinois.

Xystracanthus reversus (St. J. and Worth.).

St. John and Worthen 1875 A, p. 456, pl. xix, figs. 5, 6. (Drepanacanthus.)
Keyes, C. R. 1894 A, p. 237. (Drepanacanthus.)
St. John and Worthen 1883 A, p. 253, pl. xxiv, fig. 5. (Drepanacanthus.)
Woodward, A. S. 1891 A, p. 132. (Physonemus.)
Subcarboniferous (St. Louis); Illinois, Missouri.

BATACANTHUS St. John and Worthen. Type *B. baculiformis* St. J. and Worth.

St. John and Worthen 1875 A, p. 468.
Miller, S. A. 1889 A, p. 588.
Woodward, A. S. 1891 A, p. 132.

Batacanthus baculiformis St. J. and Worth.

St. John and Worthen 1875 A, p. 469, pl. xxi, figs. 4-8.
Keyes, C. R. 1894 A, p. 238.
Woodward, A. S. 1891 A, p. 133.
Subcarboniferous (Keokuk); Iowa, Missouri, Illinois.

Batacanthus ? necis St. J. and Worth.

St. John and Worthen 1883 A, p. 253, pl. xxv, fig. 4.
Woodward, A. S. 1891 A, p. 133.
Subcarboniferous (Keokuk); Iowa.

Batacanthus stellatus (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 125, pl. xii, fig. 7. (Drepanacanthus ?)
Hambach, G. 1890 A, p. 80.
St. John and Worthen 1875 A, p. 470, pl. xxi, figs. 1-3.
Woodward, A. S. 1891 A, p. 133.
Subcarboniferous (Keokuk); Illinois, Missouri (*fide* Hambach).

ORACANTHUS Agassiz. Type *O. milleri* Agassiz.

Agassiz, L. 1843 B (1837), iii, p. 13.
1844 A.
American Geologist 1888 A.
Davis, J. W. 1883 A, p. 525 (Oracanthus); p. 583 (Phoderacanthus).
Leidy, J. 1856 S, p. 161.
McCoy, F. 1855 A, p. 634.
Miller, S. A. 1889 A, p. 603 (Oracanthus); p. 607 (Pnigeacanthus).
Newberry, J. S. 1889 A, p. 34.
1890 A.
1897 A, p. 285.
Newberry and Worthen 1866 A, p. 122.
Nicholson and Lydekker 1889 A, p. 947.
Pictet, F. J. 1854 A, p. 284.
St. John and Worthen 1875 A, p. 480. (Pnigeacanthus; type *Oracanthus pnigeus*.)
Traquair, R. H. 1888 A, p. 85.
Woodward, A. S. 1891 A, p. 135.
Zittel, K. A. 1890 A, p. 162.

Oracanthus lineatus Newb.

Newberry, J. S. 1897 A, p. 290.
Subcarboniferous (St. Louis); Indiana.

Oracanthus multiseriatus Newb.

Newberry, J. S. 1857 C, p. 126.
Miller, S. A. 1889 A, p. 603.
Subcarboniferous; Ohio.

Oracanthus ? obliquus St. J. and Worth.

St. John and Worthen 1875 A, p. 477, pl. xxii, fig. 16.
Lesley, J. P. 1889 A, p. 501, figures.
Woodward, A. S. 1891 A, p. 139.
Subcarboniferous (Keokuk); Illinois.

Oracanthus pnigeus Newb. and Worth.

Newberry and Worthen 1866 A, p. 117, pl. xii, fig. 3.
Lesley, J. P. 1889 A, p. 724, fig.
Miller, S. A. 1889 A, p. 607. (Pnigeacanthus.)
Newberry, J. S. 1897 A, p. 286.
St. John and Worthen 1875 A, p. 480. (Pnigeacanthus deltoides.)
1883 A, p. 260. (Pnigeacanthus pnigeus).
Woodward, A. S. 1891 A, p. 138.
Subcarboniferous (Keokuk); Iowa.

Oracanthus rectus St. J. and Worth.

St. John and Worthen 1883 A, p. 257, pl xxv, fig. 3.
Lesley, J. P. 1889 A, p. 501, figs.
Woodward, A. S. 1891 A, p. 139.
Subcarboniferous (Chester); Illinois.

Oracanthus trigonalis (St. J. and Worth.).

St. John and Worthen 1883 A, p. 259, pl. xxiv, fig. 4. (Pnigeacanthus.)
Woodward, A. S. 1891 A, p. 139.
Subcarboniferous (St. Louis); Illinois.

Oracanthus vetustus Leidy.

Leidy, J. 1855 D.
Keyes, C. R. 1894 A, p. 238.
Leidy, J. 1856 S, p. 161, pl. 16, figs. 1-3.
Lesley, J. P. 1889 A, p. 501, figs.
1895 A, pl. ccxxix.
Newberry, J. S. 1890 A.
1897 A, p. 285, pl. xxii, fig. 3.
St. John and Worthen 1875 A, p. 476, pl. xxii, fig. 15. (O. consimilis.)
1875 A, p. 479.
1883 A, p. 255, pl. xxiv, fig. 2.
Woodward, A. S. 1891 A, p. 139.
Carboniferous; Missouri Territory: Subcarboniferous (St. Louis); Illinois, Missouri.

GYRACANTHUS Agassiz. Type *G. formosus* Agassiz.

Agassiz, L. 1843 B (1837), iii, p. 17.
1844 A.
Barkas, T. P. 1873 A, p. 15.
Hasse, C. 1879 A, p. 60.
Jaekel, O. 1890 D, p. 123.
McCoy, F. 1855 A, p. 629.
Miller, S. A. 1889 A, p. 598.
Newberry, J. S. 1873 A, pp. 281, 330.
1875 A, p. 57.
1889 A, p. 186.
Pictet, F. J. 1854 A, p. 284.
Reis, O. M. 1896 A.
Thompson, J. 1868 A, p. 130.
Traquair, R. H. 1884 C.
1889 B.
Ward, J. 1890 A, p. 150.
Woodward, A. S. 1885 B, p. 272.
1891 A, p. 139.
Woodward and Sherborn 1890 A, p. 88.

Gyracanthus alleni Newb.

Newberry, J. S. 1873 A, p. 331, pl. xxxvii, figs. 3-3*d*.
Claypole, E. W. 1885 B, p. 490.
Miller, S. A. 1889 A, p. 598, fig. 1134.
Traquair, R. H. 1884 C, p. 41.
Woodward, A. S. 1891 A, p. 144.
Subcarboniferous (Waverly); Ohio.

Gyracanthus compressus Newb.

Newberry, J. S. 1873 A, p. 330, pl. xxxvii, figs. 1-2*b*.
Woodward, A. S. 1891 A, p. 144.
Subcarboniferous (Waverly); Ohio, Indiana.

Gyracanthus? cordatus St. J. and Worth.

St. John and Worthen 1883 A, p. 251, pl. xxvi, fig. 4.
Woodward, A. S. 1891 A, p. 145.
Subcarboniferous (Keokuk); Iowa.

Gyracanthus duplicatus Dawson.

Dawson, J. W. 1868 A, p. 210, fig. 55.
1878 A, p. 210, fig. 55.
Lesley, J. P. 1895 A, pl. dlxx.
Newberry, J. S. 1889 A, p. 124.
Traquair, R. H. 1884 C, p. 41.
Woodward, A. S. 1891 A, p. 144.
Coal-measures; Nova Scotia.

Gyracanthus incurvus Traquair.

Traquair, R. H. 1890 A, p. 21.
Woodward, A. S. 1891 A, p. 144.
1892 A, p. 2, pl. 1, figs. 4, 5.
Devonian; Province of Quebec.

Gyracanthus inornatus Newb.

Newberry, J. S. 1889 A, p. 177, pl. xxiii, fig. 5.
Woodward, A. S. 1891 A, p. 145.
Subcarboniferous (Waverly); Ohio.

Gyracanthus magnificus Dawson.

Dawson, J. W. 1868 A, p. 210, fig. 55*a*.
1878 A, p. 210, fig. 55*a*.
Lesley, J. P. 1895 A, pl. dlxx.
Newberry, J. S. 1875 A, p. 57.
1889 A, p. 124.
Woodward, A. S. 1891 A, p. 145.
Subcarboniferous; Cape Breton.

Gyracanthus sherwoodi Newb.

Newberry, J. S. 1889 A, p. 119, pl. xviii, fig. 4.
Woodward, A. S. 1891 A, p. 145.
Devonian; Pennsylvania.

ERISMACANTHUS McCoy. Type *E. jonesii* McCoy.

McCoy, F. 1848 A, p. 118.
Davis, J. W. 1883 A, p. 364. (Cladacanthus.)
McCoy, F. 1855 A, p. 628.
Miller, S. A. 1889 A, p. 597.
Pictet, F. J. 1854 A, p. 292.
Woodward, A. S. 1886 E, p. 4.
1889 E, p. 130.
1891 A, p. 146.
Zittel, K. A. 1890 A, p. 118.

Erismacanthus maccoyanus St. J. and Worth.

St. John and Worthen 1875 A, p. 461, pl. xxii, figs. 1-5.
Keyes, C. R. 1894 A, p. 237.
Woodward, A. S. 1891 A, p. 147.
Subcarboniferous (St. Louis); Missouri, Illinois.

GAMPSACANTHUS St. J. and Worth. Type *G. typus* St. J. and Worth.

St. John and Worthen 1875 A, p. 470.
Davis, J. W. 1883 A, p. 363.
Miller, S. A. 1889 A, p. 598.
Woodward, A. S. 1891 A, p. 148.
Zittel, K. A. 1890 A, p. 118.
Keyes, C. R. 1894 A, p. 238.
Woodward, A. S. 1891 A, p. 148.
Subcarboniferous (St. Louis); Missouri.

Gampsacanthus? latus St. J. and Worth.

St. John and Worthen 1875 A, p. 474, pl. xxii, fig. 14.
Keyes, C. R. 1894 A, p. 238.
Woodward, A. S. 1891 A, p. 148.
Subcarboniferous (Keokuk); Missouri.

Gampsacanthus squamosus St. J. and Worth.

St. John and Worthen 1875 A, p. 473, pl. xxii, fig. 13.

Gampsacanthus typus St. J. and Worth.

St. John and Worthen 1875 A, p. 472, pl. xxii, fig. 12.
Keyes, C. R. 1894 A, p. 238.
Lesley, J. P. 1895 A, pl. ccxxix.
Miller, S. A. 1889 A, p. 598, fig. 1132.
Woodward, A. S. 1891 A, p. 148.
Zittel, K. A. 1890 A, p. 118, fig. 129.
Subcarboniferous (St. Louis); Missouri, Illinois.

LECRACANTHUS St. J. and Worth. Type *L. unguiculus* St. J. and Worth.

St. John and Worthen 1875 A, p. 475.
Miller, S. A. 1889 A, p. 600.
Woodward, A. S. 1891 A, p. 148.
Keyes, C. R. 1894 A, p. 238.
Woodward, A. S. 1891 A, p. 148.
Subcarboniferous (St. Louis); Missouri, Illinois.

Lecracanthus unguiculus St. J. and Worth.

St. John and Worthen 1875 A, p. 476, pl. xxii, figs. 10, 11.

LISTRACANTHUS Newb. and Worth. Type *L. hystrix* Newb. and Worth.

Newberry and Worthen 1870 A, p. 371.
Koninck, L. G. de 1878 A, p. 75.
Miller, S. A. 1889 A, p. 601.
Newberry, J. S. 1873 A, p. 336.
Woodward, A. S. 1891 A, p. 148.

Listracanthus hildrethi Newb.

Newberry, J. S. 1875 A, p. 56, pl. lix, fig. 6.
Woodward, A. S. 1891 A, p. 149.
Coal-measures; Ohio.

Listracanthus hystrix Newb. and Worth.

Newberry and Worthen 1870 A, p. 372, pl. ii, figs. 3, 3a
Cope, E. D. 1894 F, p. 433.
Hambach, G. 1890 A, p. 81.
Koninck, L. G. de 1878 A, p. 75, pl. v, fig. 11.
Miller, S. A. 1889 A, p. 601, fig. 1144.
Newberry, J. S. 1873 A, p. 337.
1875 A, p. 56, pl. lix, fig. 5.
Woodward, A. S. 1891 A, p. 148.
Coal-measures; Illinois, Ohio, Missouri (*fide* Hambach). Also reported from Belgium.

CYRTACANTHUS Newb. Type *C. dentatus* Newb.

Newberry, J. S. 1873 A, p. 306.
Miller, S. A. 1889 A, p. 594.
Woodward, A. S. 1891 A, p. 150.
Miller, S. A. 1889 A, p. 594, fig. 1122.
Newberry, J. S. 1889 A, p. 28. (Cladacanthus.)
Woodward, A. S. 1891 A, p. 150.
Devonian (Corniferous); Ohio.

Cyrtacanthus dentatus Newb.

Newberry, J. S. 1873 A, p. 307, pl. xxix, fig. 5.

HARPACANTHUS Traquair. Type *Tristychius fimbriatus* Stock.

Traquair, R. H. 1886 A, p. 493.
Newberry, J. S. 1889 A, p. 203.
Stock, T. 1882 A. ("Kammplatten.")
1882 B. (Tristychius.)
1883 A. (Tristychius.)
Traquair, R. H. 1888 A, p. 83. (Tristychius.)
Woodward, A. S. 1884 A, p. 268.
1891 A, p. 150.

Harpacanthus fimbriatus (Stock).

Stock, T. 1883 A, p. 177. (Tristychius.)
Newberry, J. S. 1889 A, p. 203, pl. xxi, fig. 11.
Traquair, R. H. 1886 A, p. 493, figs. 1, 2.
Woodward, A. S. 1891 A, p. 150, fig. 11.
Subcarboniferous (St. Louis); Illinois. Also in Scotland.

EDESTUS Leidy. Type *E. vorax* Leidy.

Leidy, J. 1855 D.
Agassiz, L., in Hitchcock, E. 1856 B.
Cope, E. D. 1870 L, p. 535.
    1872 F, p. 339.
    1875 E, p. 244c.
    1890 H.
Dean, B. 1896 D, p. 61.
Eastman, C. R. 1898 B, p. 554.
Hitchcock, E. 1856 B.
Hitchcock, Fanny R. 1887 A.
    1888 A.
Jaekel, O. 1899 A, p. 297 (Edestus); p. 298 (family Edestidæ).
    1900 A, p. 144.
Leidy, J. 1856 O, p. 301.
    1856 S, p. 157.
Lesley, J. P. 1889 A, *Errata*, p. xxi.
Miller, S. A. 1889 A, p. 597.
Newberry, J. S. 1868 A, p. 145
    1873 A, p. 286.
    1884 A.
    1885 A.
    1888 B.
    1889 A, p. 217.
Newberry and Worthen 1866 A, p. 84.
    1870 A, p. 350.
Nicholson and Lydekker 1889 A, p. 947.
Trautschold, H. 1883 A.
    1886 A.
    1888 A, p. 750.
    1890 A.
Woodward, A. S. 1888 A.
    1891 A, p. 151.
Woodward, H. 1886 A.
Zittel, K. A. 1890 A, p. 119.

Edestus giganteus Newb.

Newberry, J. S. 1888 B, p. 121, pl. vi, fig. 1.
Dana, J. D. 1896 A, p. 681, fig. 1106.
    1888 A.
Dean, B. 1897 B, p. 64, pl. v, fig. 3.
Newberry, J. S. 1889 A, p. 225, pl. xli, fig. 1.
Woodward, A. S. 1888 A.
    1891 A, p. 153.
  Coal-measures; Illinois.

Edestus heinrichsii Newb. and Worth.

Newberry and Worthen 1870 A, p. 350, pl. i, fig. 1.
Dean, B. 1897 B, p. 64, pl. v, fig. 2.
Eastman, C. R. 1898 B, p. 554.
Kindle, E. M. 1898 A, p. 484.
Newberry, J. S. 1879 A, p. 347.
    1888 B, pl. v, figs. 2, 2*a*, 2*b*.
    1889 A, p. 215.
Woodward, A. S. 1891 A, p. 152.
Woodward, H. 1886 A, p. 3.
  Coal-measures; Illinois, Indiana.

Edestus lecontei Dean.

Dean, B. 1897 B, p. 62, pl. iv; pl. v, fig. 6.
Jaekel, O. 1900 A, p. 147.
  Carboniferous?; Nevada.

Edestus minor Newb.

Newberry, J. S., in Newberry and Worthen 1866 A, p. 84, pl. iv, fig. 24.
Dana, J. D. 1896 A, p. 681, fig. 1107.
Dean, B, 1897 B, p. 64, pl. v, fig. 4.
Hitchcock, E. 1856 B, text figure. (No name.)
Kindle, E. M. 1898 A, p. 484.
Lesley, J. P. 1889 A, p. 214, figure. (E. vorax.)
Newberry, J. S. 1879 A, p. 348.
    1888 B, pl. v, fig. 1.
    1889 A, p. 215.
Newberry and Worthen 1870 A, p. 350, pl. i, fig. 2. (E. vorax, by error.)
Trautschold, H. 1888 A, p. 753.
Woodward, A. S. 1891 A, p. 153, fig. 12.
Zittel, K. A. 1890 A, p. 119. (E. vorax.)
  Coal-measures; Indiana.

Edestus vorax Leidy.

Leidy, J. 1855 D.
Dean, B. 1897 B, p. 63.
Leidy, J. 1856 O, p. 301.
    1856 S, p. 159, pl. xv.
    1870 H, p. 13.
Lesley, J. P. 1895 A, pl. ccxxix.
Miller, S. A. 1889 A, p. 597, fig. 1129.
Newberry, J. S. 1868 A, p. 145.
    1879 A, p. 347.
    1888 B, pl. iv, fig. 2.
    1889, A, p. 218.
Woodward, A. S. 1891 A, p. 154.
Woodward, H. 1886 A, p. 3.
  Coal-measures; Arkansas.

EUCTENIUS Traquair. Type *E. unilateralis* (Barkas).

Traquair, R. H., 1881, Geol. Magazine (2), viii, pp. 36, 334.
Barkas, T. P. 1881 A. (Ctenoptychius.)
Fritsch, A. 1883 A (1880), i, pl. xx. ("Kammplatten.")
Stock, T. 1881 A. ("Kammplatten.")
    1882 A.
Ward, J. 1890 A, p. 152.
Woodward, A. S. 1891 A, p. 155.

Euctenius sp. indet.

Newberry, J. S. 1889 A, p. 228.
Woodward, A. S. 1891 A, p. 156.
  Coal-measures; Ohio.

OESTOPHORUS S. A. Miller. Type *Sphenophorus lilleyi* Newb.

Miller, S. A. 1892 A, p. 716.
Newberry, J. S. 1889 A, p. 91. (Sphenophorus, type *S. lilleyi*; preoccupied.)

Oestophorus lilleyi (Newb.).

Newberry, J. S. 1889 A, p. 92. (Sphenophorus.)
Hay, O. P. 1899 E, p.791.

Lesley, J. P. 1890 A, p. 977. (Sphenophorus.)
Miller, S. A. 1892 A, p. 716.
Woodward, A. S. 1891 A, p. 157. (Sphenophorus.)
Devonian (Chemung); Pennsylvania.

Oestophorus n. sp. Eastman.

Eastman, C. R. 1899 B, p. 287. (Sphenophorus n. sp.; no description.)
Devonian; Iowa.

CALLOGNATHUS Newb. Type *C. regularis* Newb.

Newberry, J. S. 1889 A, p. 69.
Miller, S. A. 1892 A, p. 714.

Callognathus regularis Newb.

Newberry, J. S. 1889 A, p. 70, pl. xxvii, fig. 18.
Woodward, A. S. 1891 A, p. 157.
Devonian (Cleveland shale); Ohio.

Callognathus serratus Newb.

Newberry, J. S. 1889 A, p. 70, pl. xxvii, figs. 16, 17.
Woodward, A. S. 1891 A, p. 157.
Devonian (Cleveland shale); Ohio.

PROSPIRAXIS Williams. Type *Spiraxis major* Newb.

Williams, H. S. 1887 A, p. 86.
Cope, E. D. 1895 B, p. 159. (Spiraxis.)
Hollick, A. 1894 A, p. 118. (Spiraxis.)
Newberry, J. S. 1885 C, p. 219. (Spiraxis, not of Adams, 1850.)
Stainier, X. 1894 A. (Spiraxis.)

Prospiraxis major (Newb.).

Newberry, J. S. 1885 C, p. 219, pl. xviii, fig. 1. (Spiraxis.)
Cope, E. D. 1895 B, p. 159. (Spiraxis.)
Lesley, J. P. 1890 A, p. 994, figures. (Spiraxis.)
Williams, H. S. 1887 A, p. 86. (Spiraxis ?.)
Devonian (Chemung); Ohio, New York?

Prospiraxis randallii (Newb.).

Newberry, J. S. 1885 C, p. 220, pl. xviii, figs 2, 3. (Spiraxis.)
Cope, E. D. 1895 B, p. 159. (Spiraxis.)
Lesley, J. P. 1890 A, p. 995. (Spiraxis.)
Williams, H. S. 1887 A, p. 86. (Spiraxis?.)
Devonian (Chemung); Pennsylvania New York.?

Class PISCES Linnæus.

Linnæus, C., 1758, Syst. Nat., ed. x, p. 239.
Agassiz, L. 1843 B.
1844 A.
1845 A.
Baudelot, E. 1873 A.
1873 B.
Bridge, W. J. 1879 A.
1896 A.
Cope, E. D. 1872 C.
1877 O.
1878 A.
1885 G.
1889 R.
1890 B.
1891 N.
1898 B.
Dean, B. 1895 A.
Gadow, H. 1898 A, p. 7. (Teleostomi.)
Gegenbaur, C. 1898 A.
Gill, T. 1861 A. (Telostei, Ganoidei.)
1872 C.
1873 B.
1873 D.
1893 A. (Teleostomes.)
1896 C. p. 912.
Grassi, B. 1883 A.
Günther, A. 1880 A.
1881 A.
Haeckel, E. 1895 A, p. 244 (Ganoides); p. 247 (Osteodermi); p. 252 (Teleostei); p. 257 (Dipneusta).
Harrison, R. G. 1894 A. (Teleostei.)
Hertwig, O. 1876 A.
1881 A.
Hubrecht, A. A. W. 1878 A.
Humphrey, J. 1866 A.
Huxley, T. 1870 A, p. 440.
1876 A.
Jordan, D. S. 1891 A.
Jordan and Evermann, 1896 A.
1898 A.
Nicholson and Lydekker 1889 A.
Owen, R. 1847 B.
1866 A.
Parker, W. K. 1874 A.
1882 A.
Pictet, F. J. 1854 A, p. 37. ("Teleostiens.")
Pollard, H. B. 1894 B. ("Fishes.")
Rõse, C. 1894 B. ("Fishes.")
Ryder, J. 1879 B.
1885 A.
1889 B.
1892 A.
Stannius, H. 1854 A.
Steinmann and Döderlein 1890 A, p. 551. (Euichthyes.)
Woodward, A. S. 1891 A.
1895 A.
Zittel, K. A. 1890 A.

The term *Pisces* is employed here in much the same sense in which it was used originally by Linnæus; that is, to designate the fish-like animals, exclusive of the sharks and rays and the lampreys. There are furthermore included certain fossil groups and the Dipnoi, not known to Linnæus. The authors cited above use the term in various senses, and some employ other terms to designate this group.

Subclass ASPIDOGANOIDEI Gill.

Gill, T., 1876, Johnson's Univ. Cyclop., iv, p. 185.
Cope, E. D. 1889 R, p. 852. (Ostracodermi, preoccupied.)
1891 G. (Ostracophori.)
1891 N, p. 8. (Ostracophori.)
1898 B, p. 15. (Ostracophori.)
Dean, B. 1895 A. (Ostracodermi.)
Gadow, H. 1898 A, p. 4. (Hypostomata.)
Gill, T. 1896 C, p. 912.. (Aspidoganoidei.)
Hay, O. P. 1899 F, p. 682.
Jaekel, O. 1896 B, p. 127. (Ostracodermi.)
Patten, W. 1890 A. (Ostracodermi.)
Rohon, J. V. 1892 C, p. 86. (Protocephali.)
1894 A, p. 52. (Protocephali.)
1895 B, p. 16. (Protocephali.)
1896 A. (Genus Thyestes.)
1896 B, p. 16. (Protocephali.)
Traquair, R. H. 1900 A, p. 158. (Ostracodermi.)
1900 B, p. 467. (Ostracodermi.)
Woodward, A. S. 1891 A, pp. xvi, 159. (Ostracodermi.)
1892 F, p. 599.
1898 B, p. 3. (Ostracodermi.)
1900 D. (Ostracodermi.)

Order HETEROSTRACI Lankester.

Powrie and Lankester 1868 A, pp. 5, 14.
Cope, E. D. 1891 N, p. 9.
1898 B, p. 15.
Gadow, H. 1898 A, p. 4.
Rohon, J. V. 1895 B, p. 16. (Aspidorhini.)
1896 A. (Genus Thyestes.)
1896 B. (Aspidorhini.)
Traquair, R. H. 1899 A, p. 858.
1900 B, p. 467.
Woodward, A. S. 1891 A, pp. xix, 159.
1898 B, p. 5.
1900 D.
Zittel, K. A. 1890 A, p. 144.

PTERASPIDÆ.

Claypole, E. W. 1885 D, p. 56.
1885 C, p. 734.
1892 D, p. 542.
Cope, E. D. 1887 O, p. 1015.
Dean, B. 1895 A, figures.
Jaekel, O. 1896 B, p. 128.
Nicholson and Lydekker 1889 A, p. 960.
Patton, W. 1890 A.
Reis, O. M. 1896 A, pp. 212, 213.
Rohon, J. V. 1892 C.
1894 A.
Rohon, J. V. 1896 B.
1897 A.
1899 B, p. 9.
Schmidt, F. 1873 C. ("Pteraspiden.")
Steinmann and Döderlein 1890 A, p. 553.
Traquair, R. H. 1899 A, p. 849.
Woodward, A. S. 1887 A.
1891 A, p. 159.
1892 F.
Zittel, K. A. 1890 A, p. 144.

PTERASPIS Kner. Type *Cephalaspis lloydii* Agassiz, = *P. rostrata* Agassiz.

Kner, R, 1847 A, p. 165.
Agassiz, L. 1843 B, ii, p. 135. (Cephalaspis, in part.)
Alth, A. 1874 A, p. 41.
1886 A.
Claypole, E. W. 1884 A. (Pteraspis, Scaphaspis.)
1885 A.
Collinge, W. E. 1893 A, p. 2.
Eichwald, E. 1871 A, p. 1, pl. i. (Palæoteuthis, type *P. marginalis*.)
Huxley, T. H. 1858 A.
1859 A.
1861 A.
1861 B, p. 38.
1872 A, p. 128.
Jaekel, O. 1892 A, p. 90.
Kunth, A. 1872 A.
Lankester, E. R. 1862 A.
1864 A.
1864 B.
1865 A. (Pteraspis, Scaphaspis.)
1873 A.
1873 B. (Scaphaspis, Pteraspis.)
1874 A.
Mitchell, H. 1862 A.
1864 A.
Nicholson and Lydekker 1889 A, p. 960.
Owen, R. 1860 E, p. 122.
Powrie, J. 1864 A.
Powrie and Lankester 1868 A. (Pteraspis and Scaphaspis.)
Roemer, F. 1856 A. (Palæoteuthis.)
Rohon, J. V. 1892 C.
1896 B.
Ryder, J. A. 1890 A, p. 491.
Salter, J. W. 1867 A.
Schmidt, F. 1866 A, p. 217.
1873 A.
1873 B.
1873 C.
Traquair, R. H. 1899 A, p. 850.
1900 B, p. 466.
Woodward, A. S. 1887 A.
1891 A, p. 160.
1892 F, figs. 1, 9.
Zittel, K. A. 1890 A, p. 147.

No American species of this genus are known.

CYATHASPIS Lankester. Type *C. banksi* Huxley and Salter.

Lankester, R. 1865 A, p. 100.
Alth, A. 1874 A, p. 45.
1886 A.
Claypole, E. W. 1892 D.
Geinitz, H. B. 1884 A, p. 854.
Jaekel, O. 1892 A, p. 90.
Kunth, A. 1872 A.
Lankester, E. R. 1873 B.
Lindström, G. 1895 A.
Matthew, G. F. 1887 B, p. 73. (Diplaspis.)
1888 A, p. 49. (Diplaspis.)
Miller, S. A. 1889 A, p. 596. (Diplaspis.)
Powrie and Lankester 1868 A, p. 26.
Rohon, J. V. 1896 B, p. 18.
Schmidt, F. 1873 A.
1873 C.
Traquair, R. H. 1900 B, p. 467.
Woodward, A. S. 1891 A, p. 170.
1892 F, fig. 2.
Zittel, K. A. 1890 A, p. 148.

Cyathaspis acadica (Matthew).

Matthew, G. F. 1886 A. (Pteraspis ?)
American Geologist 1891 B, p. 329. (Diplaspis.)
Matthew, G. F. 1887 A.
1887 B, p. 69. (Diplaspis.)
1888 A, p. 49, pl. iv, figs. 1–4. (Diplaspis.)
1891 A. (Diplaspis.)
Miller, S. A. 1889 A, p. 596. (Diplaspis.)
Rohon, J. V. 1896 B, p. 19.
Woodward, A. S. 1891 A, p. 173.
Upper Silurian; New Brunswick.

PALÆASPIS Claypole. Type *P. americana* Claypole.

Claypole, E. W. 1884 A, p. 1224.
1885 A, p. 426.
1885 C.
1885 D, pp. 50, 62.
1892 D.
Collinge, W. E. 1893 A, p. 3.
Lankester, E. R. 1873 A, p. 242. (Holaspis, preoccupied.)
1873 C.
Lesley, J. P. 1892 A, p. 775.
Miller, S. A. 1889 A, p. 604.
Traquair, R. H. 1900 B, p. 467.
Woodward, A. S. 1891 A, p. 169.
1898 B, p. 435.
Zittel, K. A. 1890 A, p. 148. (Holaspis.)

Palæaspis americana Claypole.

Claypole, E. W. 1884 A, p. 1224.
1884 A, p. 1224. (P. bitruncata.)
1885 A, p. 426. (P. bitruncata.)
Claypole, E. W. 1884 A, p. 1224.
1885 D, p. 62, fig. 7 (P. americana); fig. 8 (P. bitruncata).
1892 D, p. 561, fig. 8.
1893 C.
Dean, B. 1895 A, p. 71.
Lesley, J. P. 1889 A, p. 575, figures. (P. americana, P. bitruncata.)
Matthew, G. F. 1888 A, p. 54.
Rohon, J. V. 1896 B, p. 21.
Traquair, R. H. 1899 A, p. 853.
Woodward, A. S. 1891 A, p. 170.
Zittel, K. A. 1890 A, p. 317.
Devonian (Onondaga); Pennsylvania.

Palæaspis elliptica Claypole.

Claypole, E. W. 1885 C.
1885 A, p. 426.
Upper Silurian; Pennsylvania.

Order OSTEOSTRACI Lankester.

Powrie and Lankester, 1868 A, p. 14.
Cope, E. D. 1891 N, p. 9.
1898 B, p. 15.
Gadow, H. 1898 A, p. 4.
Powrie and Lankester, 1870 A, p. 33.
Rohon, J. V. 1892 C, p. 86.
1895 B, p. 16. (Aspidocephali.)
1894 A, p. 51. (Aspidocephali.)
1894 B. (Trematаspidæ.)
Rohon, J. V. 1892 C, p. 86.
1896 A. (Genus Thyestes.)
1896 B, p. 21. (Aspidocephali.)
Schmidt, F. 1894 A. (Genus Thyestes.)
Traquair, R. H. 1899 A, p. 857.
1900 B, p. 467.
Woodward, A. S. 1891 A, pp. xix, 176.
1898 B, p. 8.

CEPHALASPIDÆ.

Huxley, T. H. 1861 B, p. 88.
Agassiz, L. 1843 A, p. 86. ("Céphalaspides.")
1844 B, p. 4. ("Céphalaspides.")
1846 A, p. 87. ("Céphalaspides.")
Cope, E. D. 1886 D.
1887 O, p. 1015.
Dean, B. 1895 A.
Haeckel, E. 1895 A, p. 286. (Cephalaspidæ.)
Huxley, T. H. 1872 A, p. 128.
Jaekel, O. 1892 A, p. 90.
1896 B, p. 128.
Newberry, J. S. 1873 A, p. 256.
Nicholson and Lydekker, 1889 A, pp. 959, 961.
Pictet, F. J. 1854 A, p. 218. ("Céphalaspides.")
Pollard, H. B. 1895 A, p. 419.
Powrie and Lankester, 1868 A.
1870 A.
Rohon, J. V. 1892 C.
1896 B, p. 23.
Schmidt, F. 1866 A.
1873 C.
Steinmann and Döderlein, 1890 A, p. 558.
Woodward, A. S. 1890 B, p. 316.
1891 A, p. 176.
1898 B, p. 8.
Zittel, K. A. 1890 A, p. 148.

CEPHALASPIS Agassiz. Type *C. lyelli* Agassiz.

Agassiz, L. 1843 B (1835), ii, p. 153.
1843 A.
1844 A.
1844 B. (Pterichthys.)
Alth, A. 1874 A.
1886 A.
Claypole, E. W. 1885 C.
1885 D.
1892 D, p. 556.
Cope, E. D. 1886 D.
1888 U.
Huxley, T. H. 1858 A.
1859 A.
1861 B, p. 38.
1872 A, p. 128.
Jaekel, O. 1892 A, p. 90.
Kunth, A. 1872 A.
Miller, H. 1859 A, p. 50, pls. x, xiii.
Miller, S. A. 1889 A, p. 589.
Newberry, J. S. 1856 A.
Nicholson and Lydekker, 1889 A, p. 961.
Owen, R. 1860 E, p. 122.
Pander, C. H. 1856 A.
Pictet, F. J. 1854 A, p. 219.
Powrie, J. 1861 A.
Powrie and Lankester, 1868 A.
1870 A.
Quenstedt, F. A. 1885 A, p. 353.
Rohon, J. V. 1892 C.
1896 B, p. 23.
Schmidt, F. 1866 A.
Traquair, R. H. 1857 A.
1899 A, p. 857.
1900 B, p. 467.
Woodward, A. S. 1891 A, p. 177.
1892 A, figs. 5, 10.
1898 B, p. 9.
1900 D.
Zittel, K. A. 1890 A, p. 149.

Cephalaspis campbelltonensis Whiteaves.

Whiteaves, J. F. 1881 E, p. 98
Claypole, E. W. 1884 A, p. 1223.
Miller, S. A. 1892 A, p. 714.
Rohon, J. V. 1896 B, p. 25.
Traquair, R. H. 1890 A, p. 21. (C. campbelltonensis; C. whiteavesi.)
1893 A, p. 146.
1893 D, p. 113.
Whiteaves, J. F. 1883 A, p. 355.
1883 B, p. 164.
1889 A, p. 92, pl. x, fig. 2.
Woodward, A. S. 1891 A, p. 190, pl. ix, fig. 5.
1892 A, p. 4, pl. i, fig. 6.
Lower Devonian; New Brunswick.

Cephalaspis dawsoni Lankester.

Lankester, E. R. 1870 A, p. 397, figs. 1, 2.
Claypole, E. W. 1884 A, p. 1223.
Rohon, J. V. 1896 B, p. 25.
Whiteaves, J. F. 1881 E, p. 99.
1883 B, p. 164.
1899 A, p. 410.
Woodward, A. S. 1891 A, p. 192, fig. 26.
Lower Devonian; Gaspé, Canada.

Cephalaspis jexi Traquair.

Traquair, R. H. 1893 A, p. 147.
Rohon, J. V. 1896 B, p. 25.
Traquair, R. H. 1893 D, p. 114.
Upper Devonian; Scaumenac Bay, Canada.

Cephalaspis laticeps Traquair.

Traquair, R. H. 1890 A, p. 16.
Miller, S. A. 1892 A, p. 714.
Rohon, J. V. 1896 B, p. 25.
Whiteaves, J. F. 1899 A, p. 412.
Woodward, A. S. 1891 A, p. 192.
Upper Devonian; Scaumenac Bay, Canada.

EUPHANEROPIDÆ

Woodward, A. S. 1900 B, p. 418.

EUPHANEROPS Woodward. Type *E. longævus* Woodward.

Woodward, A. S. 1900 B, p. 416.

Euphanerops longævus Woodward.

Woodward. A. S. 1900 B, p. 416, pl. x, figs. 1–1*b*.
Devonian; Quebec.

Subclass AZYGOSTEI, nom. nov.

Gill, T., 1876, Johnson's Cyclopedia, iv, p. 185. (Dipnoi.)

Superorder PLACODERMI McCoy.

McCoy, F. 1848 A, p. 6.
Cope, E. D. 1886 D, p. 1031. (Placoganoidei, Placodermi.)
1887 O, p. 1019.
1889 R, p. 856.
Dames, W. 1885 A.
Dean, B. 1891 A.
Egerton, P. G. 1848 B.
Günther, A., 1880 A, p. 351.
1881 A, p. 686.
Hay, O. P. 1899 F, p. 682.
Haeckel, E. 1895 A, pp. 236, 248.
Huxley, T. H. 1872 A, p. 129.
Jaekel, O. 1896 B, p. 128.
Koenen, A. 1883 A.
1895 A.
Lütken, C. 1873 A, p. 41.
Marsh, O. C. 1877 E.
McCoy, F. 1848 B.
1855 A, p. 598. (Placodermata.)
Newberry, J. S. 1873 A, p. 257.
1875 A, p. 3.
Nicholson and Lydekker 1889 A, 962.
Owen, R. 1860 E, p. 118.
Pander, C. H. 1857 A.
Rohon, J. V. 1892 A, p. 32.
1899 A, p. 16.
1899 B, p. 10.
Steinmann and Döderlein 1890 A, p. 551.
Zittel, K. A. 1890 A, p. 151.

Order ANTIARCHA Cope.

Cope, E. D. 1885, I p. 291.
1886 D, p. 1031.
1887 S, p. 323.
1891 N, p. 9.
1898 B, p. 15.
Gadow, H. 1898 A, p. 4.
Traquair, R. H. 1900 A, p. 159.

ASTEROLEPIDÆ.

Cope, E. D. 1885 I. (Pterichthyidæ.)
1886 D. (Pterichthyidæ, Bothriolepididæ.)
1887 O, p. 1015. (Pterichthyidæ, Bothriolepididæ.)
1887 S, p. 323. (Pterichthyidæ.)
1889 R, p. 853. (Pterichthyidæ.)
Gürich, G. 1891 A, p. 910. (Pterichthyidæ.)
Haeckel, E. 1895 A, pp. 248, 658. (Asterolepides)
Jaekel, O. 1893 A.
Nicholson and Lydekker 1889 A, p. 962. (Asterolepididæ.)
Rohon, J. V. 1899 A, p. 20.
Steinmann and Döderlein 1890 A, p. 552. (Asterolepididæ.)
Traquair, R. H. 1888 C, pls. xvii, xviii.
1894 C, pp. 64, 70.
1900 B, p. 467.
Woodward, A. S. 1891 A, pp. xviii, 208.
1898 B, p. 12.

ASTEROLEPIS Eichwald. Type *A. ornata* Eichwald.

Eichwald, E. 1840 A, p. 79.
Agassiz, L. 1844 B, p. 89 (Asterolepis, in part); p. 111 (Odontacanthus).
Beyrich, E. 1877 A.
Egerton, P. H. 1859 A, p. 121.
Eichwald, E. 1846 A, pt. ii, p. 283.
1857 A, p. 345.
1860 A, p. 1504, pl. lvi, fig. 1 (Asterolepis); p. 1521 (Coccosteus).
Jaekel, O. 1896 B, p. 128.
Miller, J. 1872 A.
Newberry, J. S. 1856 A.
1873 A, p. 323.
Pander, C. H. 1857 A.
Rohon, J. V. 1891 A.
1899 A, pp. 20, 70.
Traquair, R. H. 1888 B, p. 508.
1888 C, p. 492.
1889 A.
1894 C, p. 71.
Whiteaves J. F. 1880 A, p. 132.
Woodward, A. S. 1891 A, p. 203.
1898 B, p. 15.
Zittel, K. A. 1890 A, p. 155.

There are no known American species of this genus.

ASTRASPIS Walcott. Type *A. desiderata* Walcott.

Walcott, C. D. 1892 A, p. 166.

Astraspis desiderata Walcott.

Walcott, C. D. 1892 A, p. 166, pl. iii, figs. 6–14; pl. iv, figs. 1–4.
American Geologist 1891 E. (Asterolepis? desiderata.)
Cope, E. D. 1893 I, p. 268.
Dana, J. D. 1896 A, p. 509, fig. 695.

Silurian (Ordovician); Colorado.

PTERICHTHYODES Bleeker. Type *Pterichthys milleri* Agassiz.

Bleeker, *P.*, 1859, Tentamen, p. 11.

The following authors, unless otherwise noted, employ the name *Pterichthys* for this genus. It is, however, preoccupied by Swainson, 1839.

Agassiz, L. 1843 A, p. 81.
1844 A.
1844 B, pp. 6, 151.
1846 A, p. 48.
Beyrich, E. 1877 A.
Collinge, W. E. 1893 A, p. 3.
Cope, E. D. 1885 I.
1886 D.
1887 S, p. 323.
1888 U, p. 914.
Dean, B. 1895 A, figures.
Egerton, P. H. 1848 A.
1859 A, pp. 121, 127.
Eichwald, E. 1846 A, p. 283.
Gaudry, A. 1883 A, p. 228.
Günther, A. 1880 A, p. 351, figs. 135, 136.
1862 A.
Gürich, G. 1891 A, p. 910.
Hay, O. P. 1899 E, p. 791. (Pterichthyodes.)
Huxley, T. H. 1861 B, p. 29.
1872 A, p. 129.
Jaekel, O. 1893 A.
1896 B, p. 128.
McCoy, F. 1855 A, p. 598.
Miller, H. 1859 A, p. 42, pls. i, ii.
Miller, S. A. 1889 A, p. 610.
1892 A, p. 716. (Millerichthys.)
Newberry, J. S. 1889 A, p. 110.
Nicholson and Lydekker 1889 A, p. 962.
Owen, R. 1860 E, p. 119.
Patton, W. H. 1890 A, p. 359.
Pictet, F. J. 1854 A, p. 221.
Quenstedt, F. A. 1885 A, p. 354.
Rohon, J. V. 1891 A.
1899 B, p. 10.
Steinmann and Döderlein 1890 A, p. 552.
Traquair, R. H. 1888 B, p. 508.
1888 C, p. 485.
1891 A, p. 125.
1894 C, pp. 63, 90.
Trautschold, H. 1880 B.
Whiteaves, J. F. 1880 A.
1883 B, p. 159.
Woodward, A. S. 1890 B.
1891 A, p. 208.
1892 B, p. 234.
1892 F, fig. 7.
1896 A, p. 139.
1898 B, p. 12.
Zittel, K. A. 1890 A, p. 153.

No American species of this genus are known.

BOTHRIOLEPIS Eichwald. Type *B. ornata* Eichwald.

Eichwald, *E.* 1840 A, p. 79.
Agassiz, L. 1844 B, p. 20 (Pamphractus); pp. 97, 151 (Bothriolepis); p. 134 (Placothorax).
Claypole, E. W. 1890 A, p. 257.
Collinge, W. E. 1893 A, p. 3.
Cope, E. D. 1886 D, p. 1081.
1887 O, p. 1015.
1889 R, p. 853.
Eichwald, E. 1846 A, p. 283.
1857 A, p. 345.
1860 A, p. 1511.
Gürich, G. 1891 A, p. 909.
Lahusen, I. 1880 A.
Leidy, J. 1856 E, p. 11. (Stenacanthus.)
1856 S, p. 164. (Stenacanthus.)
Miller, S. A. 1889 A, p. 588.
Newberry, J. S. 1889 A, p. 108.
Nicholson and Lydekker 1889 A, p. 962.
Patton, W. H. 1890 A, p. 859.
Roberts, G. E. 1864 A.
Rohon, J. V. 1899 A, p. 27.
1899 B, p. 10.
Steinmann and Döderlein 1890 A, p. 552.
Traquair, R. H. 1888 B, p. 509.
1888 C, p. 495.
1894 C, p. 63.
Trautschold, H. 1880 B.
Whiteaves, J. F. 1880 A, p. 132.
1881 B, p. 23.
1883 B, p. 159.
1899 A, p. 411.
Woodward, A. S. 1891 A, p. 223.
1892 B, p. 234.
1892 C, p. 484.
1898 B, p. 14.
Woodward and Sherborn 1890 A, p. 18.
Zittel, K. A. 1890 A, p. 157.

Bothriolepis canadensis Whiteaves.

Whiteaves, *J. F.* 1880 A, p. 132. (Pterichthys.)
Cope, E. D. 1881 L. (Pterichthys.)
1885 I, fig. 1.
1886 D.
1887 S, p. 323, fig. 62.
1888 U, p. 914, pl. xv, figs. 1, 2.
1891 N, p. 9, fig. 2.
1892 X.
1898 B, p. 16, fig. 2.
Dana, J. D. 1896 A, p. 617, fig. 960.
Miller, S. A. 1889 A, p. 588, fig. 1104.
Traquair, R. H. 1888 B, p. 509.
1888 C, p. 496, pl. xviii, fig. 6.
Whiteaves, J. F. 1881 B, p. 26. [Pterichthys (Bothriolepis).]
1881 C, p. 28. (Pterichthys.)
1883 A, p. 353. (Pterichthys.)
1883 B, p. 158. (Pterichthys.)
1887 A, p. 101, pls. vi–ix. (Pterichthys.)
1889 A, p. 91.
1899 A, p. 411.
Williams, H. S. 1893 A, p. 286, figure.
Woodward, A. S. 1891 A, p. 228.
1892 C, p. 484.

Devonian; Province of Quebec, Canada.

Bothriolepis minor Newb.

Newberry, *J. S.* 1889 A, p. 112, pl. xx, figs. 6–8.
Cope, E. D. 1892 L, p. 224.
Eastman, C. R. 1899 F, p. 324, fig. 5.
Woodward, A. S. 1891 A, p. 232.

Devonian (Chemung); Pennsylvania.

Bothriolepis nitida (Leidy).

Leidy, J. 1856 E, p. 11. (Stenacanthus.)
Cope, E. D. 1892 L, p. 221. (B. leidyi.)
Eastman, C. R. 1899 F, p. 324. (B. leidyi.)
Leidy, Jos. 1856 A, p. 421. (Stenacanthus.)
1856 S, p. 163, pl. xvii, fig. 4 (Holoptychius americanus, in part); p. 164, pl. xvi, figs. 7–8 (Stenacanthus).
Newberry, J. S. 1889 A, pp. 109, 111, pl. xviii, fig. 2; pl. xx, figs. 1–5. (B. leidyi.)
Whitfield and Hovey 1900 A, p. 348. (B. leidyi,)
Woodward 1891 A, p. 232. (B. leidyi.)
Devonian (Catskill); Pennsylvania, New York.

Order ARTHRODIRA Cope.

Cope, E. D. 1891 B, p. 454.
1891 N, p. 14.
1898 B, p. 29.
Dean, B. 1895 A, p. 129.
Dollo, L. 1896 A.
Eastman, C. R. 1899 A, p. 643. ("Arthrodires.")
Gadow, H. 1898 A, p. 11.
Traquair, R. H. 1891 A, p. 126.
1900 B, pp. 470, 522.
Woodward, A. S. 1891 A, p. 276.
1898 B, p. 64.

COCCOSTEIDÆ.

Dean, B. 1897 A, p. 61.
Eastman, C. R. 1896 A.
1898 D, p. 748.
1899 A, p. 643.
Steinmann and Döderlein 1890 A, p. 552.
Gürich, G. 1891 A, p. 910.
Jaekel, O. 1896 B, p. 127. ("Coccosteiden.")
Koenen, A. 1895 A, p. 8.
Rohon, J. V. 1899 A, p. 31.
Traquair, R. H. 1890 B, p. 55.
Woodward, A. S. 1891 A, p. 277.
1898 B, p. 65.

COCCOSTEINÆ, nom. nov.

COCCOSTEUS Agassiz. Type *C. decipiens* Agassiz.

Agassiz, L. 1844 B, p. 22.
1843 A. (Definition insufficient; no species).
Alth, A. 1874 A, p. 88.
Claypole, E. W. 1893 A.
1893 G, p. 615.
Collinge, W. E. 1893 A, p. 4.
Cope, E. D. 1886 D, p. 1030.
Dames, W. 1885 A.
Davis, J. W. 1880 A, p. 356.
Dean, B. 1895 A, p. 130.
Eastman, C. R. 1898 D, p. 748.
Egerton, P. H. 1859 A, p. 127.
Gaudry, A. 1883 A, p. 232.
Günther, A. 1880 A, p. 354, fig. 137.
Gürich, G. 1891 A.
Huxley, T. H. 1861 B, p. 29.
1872 A, p. 129.
Jaekel, O. 1891 A.
1899 A, p. 276.
Koenen, A. 1883 A, p. 9.
1890 A.
1895 A, p. 3.
Lahusen, I. 1880 A.
McCoy, F. 1855 A, p. 601.
Miller, H. 1859 A, p. 18, pls. iii, ix.
Miller, S. A. 1889 A, p. 591.
Newberry, J. S. 1856 A.
1875 A, pp. 1–27, 32.
Nicholson and Lydekker 1889 A, p. 964.
Owen, R. 1860 E, p. 123.
1866 A, p. 196, fig. 127.
Pander, C. H. 1857 A.
Pictet, F. J. 1854 A, p. 220.
Pollard, H. B. 1895 A, p. 419.
Quenstedt, F. A. 1885 A, p. 355.
Rohon, J. V. 1892 A, p. 18.
1899 A, p. 31.
Ryder, J. A. 1890 A, p. 491.
Steinmann and Döderlein 1890 A, p. 552.
Traquair, R. H. 1888 B, p. 511.
1889 A.
1890 C.
1890 D.
1891 A, p. 126.
1891 B.
1893 A, p. 149.
1900 A, p. 159.
Trautschold, H. 1880 C, p. 145.
1889 A.
1889 B.
Woodward, A. S. 1891 A, p. 278.
1898 B, p. 60.
Woodward and Sherborn 1890 A, p. 87.
Wright, A. A. 1893 A, p. 621.
Zittel, K. A. 1890 A, p. 158.

Coccosteus canadensis Woodward.

Woodward, A. S. 1892 C, p. 483, pl. xiii, fig. 2.
Traquair, R. H. 1893 C, p. 265.
Devonian; Canada.

Coccosteus cuyahogæ Claypole.

Claypole, E. W. 1893 A.
1893 G, p. 615, pl. xli, fig. 2.
Devonian (Cleveland shale); Ohio.

Coccosteus macromus Cope.

Cope, E. D. 1892 L, p. 225.
Devonian (Chemung); Pennsylvania.

Coccosteus occidentalis Newb.

Newberry, J. S. 1875 A, p. 32, pl. liv, figs. 2, 2*a*.
Claypole, E. W. 1893 A, p. 168.
1893 G, p. 615.
Newberry, J. S. 1889 A, p. 52, pl. xxv, figs. 2, 2*a*.
Woodward, A. S. 1891 A, p. 293.
Zittel, K. 1890 A, p. 160.
Devonian (Corniferous); Ohio.

LIOGNATHUS Newb. Type *L. spatulatus* Newb.

Newberry, J. S. 1873 A, p. 306.
Miller, S. A. 1889 A, p. 600.
1892 A, p. 716. (Lispognathus, type *Liognathus spatulatus*.)
Newberry, J. S. 1889 A, p. 52. (Syn. of Coccosteus.)
Zittel, K. A. 1890 A, p. 162.

Liognathus spatulatus Newb.

Newberry, J. S. 1873 A, p. 306, pl. xxix, fig. 4.
Claypole, E. W. 1893 A, p. 169. (L. spathulatus.)
1893 G, p. 615.
Miller, S. A. 1889 A, p. 600, fig. 1142.
1892 A, p. 716. (Lispognathus).
Newberry, J. S. 1889 A, p. 52. (Syn. of Coccosteus occidentalis.)
Devonian (Corniferous); Ohio.

PHLYCTÆNASPIS Traquair. Type *Coccosteus acadicus* Whiteaves.

Traquair, R. H. 1890 E, p. 144.
Collinge, W. E. 1893 A, p. 5.
Eastman, C. R. 1898 D, p. 755.
Traquair, R. H. 1890 A, p. 20. (Phlyctænius, type *Coccosteus acadicus;* preoccupied by Phlyctænium Zittel.)
1890 B. (Phlyctænius.)
1894 B. (Phlyctænaspis.)
1900 A, p. 159.
Whiteaves, J. F. 1899 A, p. 412.
Woodward, A. S. 1891 A, p. 295.

Phlyctænaspis acadica (Whiteaves).

Whiteaves, J. F. 1881 E, p. 94, fig. 1. (Coccosteus).
Claypole, E. W. 1893 A, p. 168. (Coccosteus.)
1893 G, p. 615. (Coccosteus.)
Dana, J. D. 1896 A, p. 616, fig. 964.
Traquair, R. H. 1890 A.
1890 B, p. 60, pl. iii, figs. 1, 2. (Phlyctænius.)
1893 A, p. 147, fig. 1.
1898 D, p. 115.
Whiteaves, J. F. 1883 A, p. 355. (Coccosteus.)
1883 B, p. 163. (Coccosteus.)
1889 A, p. 93, pl. ix. (Coccosteus.)
Williams, H. S. 1893 A, p. 286. (Phlyctænius.)
Woodward, A. S. 1891 A, p. 295.
1892 A, p. 5, pl. 1, figs. 7, 8.
1892 C, p. 481.
Devonian; New Brunswick.

ASPIDICHTHYS Newb. Type *A. clavatus* Newb.

Newberry, J. S. 1873 A, pp. 269, 322.
Koenen, A. 1883 A, p. 33.
1895 A, p. 13.
Miller, S. A. 1889 A, p. 587.
Newberry, J. S. 1870 B, p. 153. (Aspidophorus; preoccupied.)
1889 A, pp. 26, 59, 72.
Whiteaves, J. F. 1892 A, p. 355.
Zittel, K. A. 1890 A, p. 158.

Aspidichthys clavatus Newb.

Newberry, J. S. 1873 A, pp. 257, 269, 273, 323, pl. xxxv, figs. 1, 2.
Miller, S. A. 1889 A, p. 588, fig. 1102.
Newberry, J. S. 1889 A, p. 73, pl. xxxviii, figs. 3, 4.
Whiteaves, J. F. 1892 A, p. 358.
Williams, H. S. 1887 A, p. 43.
Devonian (Cleveland shale); Ohio: (Portage); New York.

Aspidichthys? notabilis Whiteaves.

Whiteaves, J. F. 1892 A, p. 354, pl. xlvii, figs. 1, 1a.
1898 B, p. 411, pl. 1, figs. 1, 2.
Devonian, Manitoba.

DINICHTHYINÆ.

Eastman, C. R. 1897 D, p. 34.

Most of the following authors regard this group as of family value:

Claypole, E. W. 1892 B.
Cope, E. D. 1890 H.
Dean, B. 1895 A, p. 130.
1896 A.
Eastman, C. R. 1896 A.
1896 B.
1898 C, p. 372. (Coccosteidæ, in part.)
1898 D, p. 747. (Dinichthynæ.)
Newberry, J. S. 1885 D, p. 14. (Dinichthydæ.)
Nicholson and Lydekker 1889 A, p. 965.
Woodward, A. S. 1891 A, p. 277. (Coccosteidæ, in part.)

DINICHTHYS Newb. Type *D. hertzeri* Newb.

Newberry, J. S. 1868 B, p. 146.
American Geologist 1891 A.
Claypole, E. W. 1888 A, p. 63.
1892 A (Dinichthys); p. 1 (Gorgonichthys, type *G. clarki*).
1892 B.
1892 C.
1893 E, p. 97. (Gorgonichthys.)
Claypole, E. W. 1888 A, p. 63.
1893 G, p. 606 (Dinichthys); p. 614 (Gorgonichthys).
1894 C, p. 189.
1895 E, p. 473. (Gorgonichthys.)
1896 B.
Cope, E. D. 1890 H.
1891 B, p. 450.
1892 X.

Dean, B. 1891 A.
1895 A.
1896 A, pls. vii, viii.
1897 A, p. 57, pls. ii, iii.
Eastman, C. R. 1896 A.
1896 B.
1896 C.
1897 D, p. 19.
1898 A.
1898 C, p. 371.
1898 D, p. 747.
1899 A, p. 643.
1900 B, p. 32.
Hay, O. P. 1899 E, 791.
Hitchcock, C. H. 1868 A, p. 184.
Huene, F. 1900 A, p. 64.
Koenen, A. 1895 A, p. 16.
Miller, S. A. 1889 A, p. 596.
1892 A, p. 717. (Ponerichthys, type *D. terrelli* Newb.)
Newberry, J. S. 1870 B, p. 153.
1873 A, pp. 257, 269, 313.
1875 A, p. 3.
1883 B.
1884 A.
1885 A.
1885 B, p. 25.
1885 D, p. 11.
1889 A, p. 135.
1892 A.
Nicholson and Lydekker 1889 A, p. 965.
Pollard, H. B. 1895 A, p. 420.
Reis, O. M. 1896 A, p. 152.
Steinmann and Döderlein 1890 A, p. 553.
Woodward, A. S. 1891 A, p. 300.
1898 B, p. 68.
Wright, A. A. 1894 A, p. 313.
1893 A, p. 620.
Zittel, K. A. 1890 A, p. 160.

Dinichthys canadensis Whiteaves.

Whiteaves, J. F. 1892 A, p. 353, pl. xlvi, fig. 12.
Claypole, E. W. 1896 B, p. 355.
1893 G, p. 606.
Miller, S. A. 1897 A, p. 793. (Ponerichthys.)
Upper Devonian; Manitoba.

Dinichthys clarki (Claypole).

Claypole, E. W. 1892 A. (Gorgonichthys.)
1893 E, p. 97. (Gorgonichthys.)
1893 G, p. 614, pl. xli, fig. 3. (Gorgonichthys.)
1895 E, p. 473. (Gorgonichthys.)
Eastman, C. R. 1900 A, p. 35.
Devonian (Cleveland shale); Ohio.

Dinichthys curtus Newb.

Newberry, J. S. 1888 D, p. 179.
Claypole, E. W. 1893 G, p. 606.
Eastman, C. R. 1900 B, p. 33.
Miller, S. A. 1892 A, p. 717. (Ponerichthys.)
Newberry, J. S. 1889 A, p. 156, pls. xlviii, fig. 3?; pl. liii, figs. 1-3.
Woodward, A. S. 1891 A, p. 301.
Wright, A. A. 1893 A, p. 623.
Devonian (Cleveland shale); Ohio.

Dinichthys gouldii Newb.

Newberry, J. S. 1885 B, p. 26.
Claypole, E. W. 1893 G, p. 606.
1896 C.
Dean, B. 1896 A, pls. vii, viii.
1897 A, p. 60, pl. ii.
Miller, S. A. 1892 A, p. 717. (Ponerichthys.)
Newberry, J. S. 1889 A, p. 150, pl. ix, fig. 1; pl. x, figs. 1, 2.
Woodward, A. S. 1891 A, p. 301.
Devonian (Cleveland shale); Ohio.

Dinichthys gracilis Claypole.

Claypole, E. W. 1893 F, p. 279, text figures.
1893 G, p. 607, pl. xli, fig. 1.
Miller, S. A. 1897 A, p. 793. (Ponerichthys.)
Devonian (Cleveland shale); Ohio.

Dinichthys halmodeus (Clarke).

Clarke, J. M. 1894 A, p. 162, pl. i, and text figures. (Coccosteus.)
Eastman, C. R. 1900 B, p. 34.
Devonian; New York.

Dinichthys hertzeri Newb.

Newberry, J. S. 1868 B.
Claypole, E. W. 1893 E, p. 94.
1893 F, p. 277.
1893 G, p. 606.
Dana, J. D. 1896 A, p. 617, figs. 965, 966.
Dean, B. 1891 A, p. 310, pl. i; pl. iii, figs. 3, 4.
Eastman, C. R. 1900 B, p. 34.
Hitchcock, C. H. 1868 A, p. 184, figs. 1, 2.
Lesley, J. P. 1889 A, p. 202, figure.
1892 A, p. 1333.
Miller, S. A. 1889 A, p. 596.
1892 A, p. 717. (Ponerichthys.)
Newberry, J. S. 1873 A, p. 316, pls. xxx, xxxi.
1875 A, p. 3.
1878 A, p. 189.
1885 D, p. 11. (D. stertzeri, *errore.*)
1889 A, pp. 64, 338, pl. xxxiii, fig. 2.
Woodward, A. S. 1891 A, pp. 301, 302.
Zittel, K. A. 1890 A, p. 160.
Devonian (Huron shale); Ohio.

Dinichthys intermedius Newb.

Newberry, J. S. 1889 A, p. 152, pl. x, figs. 1, 2; pl. xlvii, figs. 1, 2, 3?, 4; pls. li, lii.
Claypole, E. W. 1892 C.
1893 G, p. 606.
1894 A, p. 190.
1896 C.
Dean, B. 1891 A, p. 312, pl. ii; pl. iii, figs. 1, 2.
1895 A, p. 133, figs. 133, 136, 144.
Eastman, C. R. 1897 D, p. 19, pl. i, fig. 1; pl. iii, fig. 1 (?).
1898 C, p. 371.
1898 D, pp. 747, 755, fig. 3.
1900 B, p. 33.
Miller, S. A. 1892 A, p. 717. (Ponerichthys.)
Woodward, A. S. 1891 A, p. 301.
Wright, A. A. 1893 A, p. 623.
Devonian (Cleveland shale); Ohio.

Dinichthys lincolni Claypole.

Claypole, E. W. 1893 F, p. 277, text figure.
Miller, S. A. 1897 A, p. 793. (Ponerichthys.)
Devonian (Marcellus); Pennsylvania.

Dinichthys minor Newb. (not of Ringueberg).

Newberry, J. S. 1878 A, p. 191.
Claypole, E. W. 1893 G, p. 606.
Dean, B. 1897 A, p. 58. (D. minor?)
Miller, S. A. 1892 A, p. 717. (Ponerichthys.)
Newberry, J. S. 1889 A, p. 149, pl. viii, figs. 1-8.
Devonian (Cleveland shale); Ohio.

Dinichthys newberryi Clarke.

Clarke, J. M. 1885 A, p. 17, pl. i, fig. 1.
1897 A, p.
Claypole, E. W. 1893 G, p. 606.
Eastman, C. R. 1897 D, p. 30, pl. i, fig. 2; pl. iv.
Newberry, J. S. 1889 A, p. 153.
Lesley, J. P. 1889 A, p. 202, figure.
Woodward, A. S. 1891 A, p. 301.
Devonian (Hamilton); New York.

Dinichthys præmaxillaris nom. nov.

Claypole, E. W. 1893 F, p. 279, pl. xii. (D. clarki, preoccupied by Gorgonichthys clarki 1892.)
1893 G, p. 607, pl. xli, fig. 1. (D. clarki.)
Eastman, C. R. 1900 B, p. 35. (D. clarki.)
Miller, S. A. 1897 A, p. 793. (Ponerichthys clarki.)
Devonian (Cleveland shale); Ohio.

Dinichthys ? precursor Newb.

Newberry, J. S. 1889 A, p. 51, pl. xli.
Claypole, E. W. 1893 G, p. 606. (D. præcursor.)
Eastman, C. R. 1899 F, p. 319. (Syn. of D. tuberculatus.)
Miller, S. A. 1892 A, p. 717. (Ponerichthys præcursor.)
Woodward, A. S. 1891 A, p. 302.
Devonian (Corniferous); Ohio.

Dinichthys prentis-clarki. Claypole.

Claypole, E. W. 1896 C, pl. vii.
Miller, S. A. 1897 A, p. 792. (D. prentis clarkei.)
Devonian (Cleveland shale); Ohio.

Dinichthys pustulosus Eastman.

Eastman, C. R. 1897 D, p. 38, pl. iii, fig. 4 (D. pustulosus); p. 40 (D. mixeri).
1898 B, p. 556.
1898 C, p. 371.
1898 D, p. 748, figs. 1, 2.
1899 B, pp. 278, 283.
1900 B, p. 32, fig. 1.
Devonian (Hamilton); Wisconsin, Iowa, Illinois, New York.

Dinichthys ringuebergi Newb.

Newberry, J. S. 1889 A, p. 60.
Claypole, E. W. 1893 G, p. 606.
Eastman, C. R. 1897 D, p. 49.
Lesley, J. P. 1892 A, p. 1333. (No name.)
Ringueberg, E. N. S. 1884 A. (D. minor; not of Newberry.)
Woodward, A. S. 1891 A, p. 302.
Devonian (Portage); Ohio.

Dinichthys terrelli Newb.

Newberry, J. S. 1873 A, p. 322, pls. xxxii-xxxiv.
Claypole, E. W. 1893 G, pp. 606, 607, pl. xliii, figs. 1-5.
1893 E, p. 95.
1894 C, p. 189, figs. 1-5.
Cope, E. D. 1891 B, p. 450.
Dean, B. 1891 A, p. 310.
1895 A, p. 137.
1896 A, pl. viii, fig. 3.
1897 A, p. 59, pl. iii.
Eastman, C. R. 1896 B.
1897 D, pl. ii, figs. 1, 5, 6; pl. iii, fig. 2.
1898 D, pp. 747, 758.
Miller, S. A. 1892 A, p. 717. (Ponerichthys.)
Newberry, J. S. 1873 A, p. 316, pls. xxxii-xxxiv. (D. hertzeri, in part.)
1874 C, p. 149.
1875 A, p. 27, charts v, vi.
1885 D, p. 11.
1888 D, p. 179.
1889 A, *passim*, pl. iv, figs. 1, 2.
1892 A.
Woodward, A. S. 1890 A, p. 391.
1891 A, p. 302.
1891 D.
Wright, A. A. 1893 A, p. 621, pl. xliv; text fig. 1.
1894 A, pl. ix.
Devonian (Cleveland shale); Ohio.

Dinichthys tuberculatus Newb.

Newberry, J. S. 1888 D, p. 179.
Claypole, E. W. 1893 F, p. 277.
1893 G, p. 606.
Cope, E. D. 1892 X, p. 1025. (D. pustulosus.)
Eastman, C. R. 1896 A.
1897 D, p. 38.
1899 B, pp, 278, 283.
1899 F, p. 318.
Lohest, M. 1890 A, p. lvii. (D. pustulosus; *fide* Eastman.)
Miller, S. A. 1892 A, p. 717. (Ponerichthys.)
Newberry, J. S. 1889 A, p. 98, pl. xxxii.
Woodward, A. S. 1891 A, p. 302.
Devonian (Chemung); Pennsylvania: (Corniferous); Ohio: (Hamilton); Wisconsin: (Upper Devonian); Iowa.

Dinichthys sp. indet.

Eastman, C. R. 1899 F, p. 320, fig. 1.
Devonian (Chemung); New York.

Dinichthys sp. indet.

Eastman, C. R. 1899 F, p. 326, fig. 6.
Devonian (Catskill); New York.

STENOGNATHUS Newb. Type *Dinichthys corrugatus* Newb.

Newberry, J. S. 1897 A, p. 303.

Stenognathus corrugatus Newb.

Newberry, J. S. 1889 A, p. 151, pl. vii, figs. 3, 3*a*. (Dinichthys.)
1885 B, p. 26. (No description.)
1897 A, p. 303, pl. xxiv, figs. 27, 28. (Stenognathus.)
Woodward, A. S. 1891 A, p. 301. (Dinichthys).
Devonian (Cleveland shale); Ohio.

TITANICHTHYS Newb. Type *T. agassizii* Newb.

Newberry, J. S. 1885 B, p. 27.
American Geologist 1891 A.
Claypole, E. W. 1892 A.
1892 B.
1893 E, p. 95.
1893 G, pp. 608, 611.
Cope, E. D. 1891 B, p. 450.
Eastman, C. R. 1896 B.
1898 D.
1899 A, p. 643.
Miller, S. A. 1892 A, p. 717.
Newberry, J. S. 1885 D, p. 13.
Woodward, A. S. 1891 A, p. 302.

Titanichthys agassizii Newb.

Newberry, J. S. 1885 B, p. 27.
Claypole, E. W. 1893 G, p. 608, pl. xlii, fig. 5.
Cope, E. D. 1891 B, p. 450.
Dana, J. D. 1888 A, p. 498.
Eastman, C. R. 1898 C, p. 372.
1898 D, p. 761, fig. 4.
1899 D, p. 15.
Newberry, J. S. 1889 A, p. 153, pl. i; pl. ii, figs. 1, 2; pl. iv, fig. 4.
Woodward, A. S. 1891 A, p. 302.
Devonian (Cleveland shale); Ohio.

Titanichthys attenuatus Wright.

Wright, A. A., in Claypole, E. W. 1893 G, p. 612, pl. xlii, figs. 1, 2.
Devonian (Cleveland shale); Ohio.

Titanichthys brevis Claypole.

Claypole, E. W. 1896 A, pl. x.
Devonian (Cleveland shale); Ohio.

Titanichthys clarkii Newb.

Newberry, J. S. 1887 C, p. 164.
Claypole, E. W. 1888 A, p. 62.
1893 G, p. 608, pl. xlii, fig. 3.
Cope, E. D. 1888 P.
Dana, J. D. 1888 A, p. 498.
Dean, B. 1895 A, p. 136, fig. 139.
Eastman, C. R. 1898 C, p. 372.
1898 D, p. 765, fig. 5; fig. 6.?
Newberry, J. S. 1889 A, p. 133, pl. ii, figs. 3, 4; pl. iii.
Woodward, A. S. 1891 A, p. 302.
Devonian (Cleveland shale); Ohio.

Titanichthys rectus Claypole.

Claypole, E. W. 1893 G, p. 609, pl. xlii, fig. 5
Devonian (Cleveland shale?); Ohio.

Titanichthys sp. indet.

Claypole, E. W. 1893 G, p. 609, pls. xxxviii, xxxix.

TRACHOSTEUS Newb. Type *T. clarkii* Newb.

Newberry, J. S. 1889 A, p. 166.
Dean, B. 1893 B.
1895 A, p. 136.
1897 A, p. 59.
Miller, S. A. 1892 A, p. 717.
Woodward, A. S. 1891 A, p. 311.

Trachosteus clarkii Newb.

Newberry, J. S. 1889 A, p. 167, pl. xlii, figs. 1–8.
Claypole, E. W. 1888 A, p. 63.
Dean, B. 1895 A, p. 137, fig. 140.
Woodward, A. S. 1891 A, p. 311.
Devonian (Cleveland shale); Ohio.

DIPLOGNATHUS Newb. Type *D. mirabilis* Newb.

Newberry, J. S. 1878 A, p. 188.
Dean, B. 1895 A, p. 137.
1897 A, p. 60.
Newberry, J. S. 1885 A.
1885 B, p. 27.
1889 A, p. 159.
Zittel, K. A. 1890 A, p. 162.

Diplognathus mirabilis Newb.

Newberry, J. S. 1878 A, p. 188.
Dean, B. 1895 A, p. 137, figs. 141–143.
Newberry, J. S. 1884 A.
1885 A.
1885 B, p. 27.
1889 A, p. 159, pl. xi, figs. 1–4; pl. xii, figs. 1–3.
Woodward, A. S. 1891 A, p. 312.
Devonian (Cleveland shale); Ohio.

BRONTICHTHYS Claypole. Type *B. clarki* Claypole.

Claypole, E. W. 1894 B.
1895 E.
Miller, S. A. 1897 A, p. 792.

Brontichthys clarki Claypole.

Claypole, E. W. 1894 B, pl. xii.
Devonian (Cleveland shale); Ohio.

MACROPETALICHTHYIDÆ.

Eastman, C. R. 1898 C, p. 372.
1898 D, p. 748.

MACROPETALICHTHYS Norw. and Owen. Type *M. rhapheidolabis* Norw. and Owen.

Norwood and Owen 1846 A.
Claypole, E. W. 1896 B, p. 354.
Cope, E. D. 1890 H.
1891 B, p. 449.
1891 C.
Dean, B. 1895 A, p. 135.
Eastman, C. R. 1897 C.
1898 C, p. 372.
1898 D, p. 748.
1900 B, p. 36.
1900 C, p. 392 (Macropetalichthys); p. 391 (Physichthys).
1900 D, p. 177. (Physichthys.)
Koenen, A. 1895 A, p. 22.
Meyer, H. v., 1855, Palæontographica, iv, p. 80. (Physichthys.)
Miller, S. A. 1889 A, p. 601.
Newberry, J. S. 1846 A, p. 291.
1857 A, p. 147. (Agassizichthys.)
1857 C, p. 122. (Agassizichthys.)
1862 A, p. 75, fig. 1.
1870 B, p. 152.
1873 A, p. 290 *et passim*.
1889 A, p. 41.
Nicholson and Lydekker 1889 A, p. 975.
Norwood and Owen 1846 B.
Woodward, A. S. 1891 A, p. 303.
1892 B, p. 233.
Zittel, K. A. 1890 A, p. 164.

Macropetalichthys rhapheidolabis Norwood and Owen.

Norwood and Owen 1846 A, figs. 1, 2.
Kindle, E. M. 1898 A, p. 484.
Miller, S. A. 1889 A, p. 601.
Norwood and Owen 1846 B.
Newberry, J. S. 1853 A, p. 12, fig. 1.
Woodward, A. S. 1891 A, p. 304. (Syn. of M. sullivanti.)

Devonian (Corniferous); Indiana.

Owen in the original description mentions the alternative name, *Pterichthys norwoodensis*.

Macropetalichthys sullivanti Newb.

Newberry, J. S. 1857 C, p. 122, fig. 1 (Agassizichthys manni); p. 123 (A. sullivanti).
Cope, E. D. 1891 B, pp. 449, 456, pl. xxx, fig. 5.
Eastman, C. R. 1897 C, pl. xii and text fig. 1.
Lesley, J. P. 1892 A, pl. cl.
Miller, S. A. 1889 A, p. 601, fig. 1146.
Newberry, J. S. 1857 A, p. 147. (Agassizichthys sullivanti, A manni.)
1862 A, p. 75. (A sullivanti, A. manni.)
1873 A, p. 294 *et passim*, pl. xxv, fig. 1.
1889 A, p. 28 (M. manni); p. 306, pl. xxxviii, figs. 1-2*a* (M. sullivanti).
Whiteaves, J. W. 1880 A, p. 133.
1889 B, p. 119.
Woodward, A. S. 1891 A, p. 304.

Devonian (Corniferous); Ohio.

GLYPTASPIS Newb. Type *G. verrucosa* Newb.

Newberry, J. S. 1889 A, p. 157.
Dean, B. 1897 A, p. 59.
Miller, S. A. 1892 A, p. 715.
Newberry, J. S. 1897 A, p. 304.

Glyptaspis verrucosa Newb.

Newberry, J. S. 1889 A, p. 158, pl. xiii, figs. 1, 2.
Woodward, A. S. 1891 A, p. 311.

Devonian (Cleveland shale); Ohio.

ASTEROSTEIDÆ.

Woodward, A. S. 1891 A, p. 312.

ASTEROSTEUS Newb. Type *A. stenocephalus* Newb.

Newberry, J. S. 1875 A, p. 35.
Eastman, C. R. 1900 B, p. 36.
Miller, S. A. 1889 A, p. 588.
Newberry, J. S. 1889 A, p. 44.
Woodward, A. S. 1891 A, p. 312.
Zittel, K. A. 1890 A, p. 164.

Asterosteus stenocephalus Newb.

Newberry, J. S. 1875 A, p. 36, pl. liv, fig. 1.
Claypole, E. W. 1896 B, p. 354.
Newberry, J. S. 1889 A, p. 45, pl. xxx, fig. 1.
Whitfield and Hovey 1900 A, p. 348.
Woodward, A. S. 1891 A, p. 313.

Devonian (Corniferous): Ohio.

PHYLLOLEPIDÆ.

Woodward, A. S. 1891 A, p. 313.

PHYLLOLEPIS Agassiz. Type *P. concentrica* Agassiz.

Agassiz, L. 1844 B, p. 67.
Fritsch, A. 1889 B (1888), p. 89.
Giebel, C. G. 1848 A, p. 227.
Newberry, J. S. 1889 A, p. 97.
Pictet, F. J. 1854 A, p. 144.
Woodward, A. S. 1891 A, p. 313.
Zittel, K. A. 1890 A, p. 180.

Phyllolepis delicatula Newb.

Newberry, J. S. 1889 A, p. 97, pl. xix, fig. 11.
Woodward, A. S. 1891 A, p. 314.

Devonian (Chemung); Pennsylvania.

HOLONEMA Newb. Type *H. rugosum* Claypole.

Newberry, J. S. 1889 A, p. 92.
Claypole, E. W. 1890 A.
Cope, E. D. 1891 B, p. 456.
1892 L, p. 221, pl. vii, fig. 3.
Dana, J. D. 1896 A, p. 616, fig. 698.
Dean, B. 1897 A, p. 59.
Miller, S. A. 1892 A, p. 715.
Williams, H. S. 1891 A.
1893 A, p. 285.
Woodward, A. S. 1891 A, p. 314.
1892 B, p. 234.

Holonema horridum Cope.

Cope, E. D. 1892 L, p. 222, pl. vii, fig. 1.
Devonian (Chemung); Pennsylvania.

Holonema rugosum (Claypole).

Claypole, E. W. 1883 A, fig. 1. (Pterichthys.)
1890 A, p. 255. (Pterichthys.)
Cope, E. D. 1891 B, p. 456.
Lesley, J. P., 1889 A, p. 808, figure.
Newberry, J. S. 1889 A, p. 93, pl. xvii, figs. 1–4.
Williams, H. S. 1891 A.
1893 A, p. 285, with figures.
Woodward, A. S. 1891 A, p. 315.
Devonian (Chemung); Pennsylvania, New York.

MYLOSTOMATIDÆ.

Woodward, A. S. 1891 A, p. 315.

MYLOSTOMA Newb. Type M. *variabile* Newb.

Newberry, J. S. 1883 A, p. 145.
Dean B. 1893 B.
1895 A, p. 136.
1897 A, p. 60.
Miller, S. A. 1892 A, p. 716.
Newberry, J. S. 1884 A.
1885 A, p. 724.
1889 A, p. 161.
Woodward, A. S. 1891 A, p. 315.
Zittel, K. A. 1890 A, p. 128.

Mylostoma terrelli Newb.

Newberry, J. S. 1883 A, p. 147.
1889 A, p. 164, pl. xiv, figs. 1, 2.
Woodward, A. S. 1891 A, p. 316.
Devonian (Cleveland shale); Ohio.

Mylostoma variabile Newb.

Newberry, J. S. 1883 A, p. 146.
Dean, B. 1895 A, p. 137, fig. 138.
Newberry, J. S. 1889 A, p. 165, pls. xv, xvi.
Woodward, A. S. 1891 A, p. 316.
Devonian (Cleveland shale); Ohio.

Superorder DIPNOI Müller.

Müller, J. 1846 C, p. 201.
Ayres, H. 1893 A.
Balfour, F. M. 1882 A, p. 432.
Baur, G. 1896 C, p. 670.
Beard, J. 1890 A.
Beyrich, E. 1850 A, p. 153.
Bridge, T. W. 1898 A, p. 325.
Chamberlin, T. C. 1900 A, p. 411. ("Dipnoans.")
Cope, E. D. 1872 C.
1877 O, p. 41.
1878 A, p. 292.
1884 N, p. 579.
1884 H H.
1885 G.
1887 S, pp. 184, 824.
1889 R, pp. 853, 854.
1890 B.
1891 N, pp. 10, 14.
1898 B, pp. 17, 21.
Dean, B. 1895 A, p. 116.
Dollo, L. 1896 A. ("Dipneustes.")
Eastman, C. R. 1898 A, p. 110.
Fritsch, A. 1889 B, p. 65.
Gadow, H., 1898 A, p. 11.
Gadow and Abbott 1895 A.
Gegenbaur, C. 1865 B, pp. 72, 146.
1895 A.
1895 B.
1898 A.
Gill, T. 1861 A, p. 22.
1873 B.
1893 A, p. 130.
1896 C, p. 912.
Goeppert, E. 1895 A.
Günther A. 1870 A, p. 321.
1871 A.
1872 A.
1880 A, p. 355.
1881 A, p. 686.
Haeckel, E. 1895 A, p. 257. (Dipneusta.)
Hasse, C. 1893 A.
Hay, O. P. 1899 F, p. 682.
Huxley, T. H. 1872 A, p. 145.
Kehner, F. A. 1876 A, p. 351.
Klaatsch, H. 1890 A, p. 209.
1893 A.
1896 A, p. 316.
Miall, L. C. 1878 A.
Mollier, S. 1893 A, p. 86.
Müller, J. 1846 C, p. 201.

Newberry, J. S. 1873 A, pp. 249, 252.
Nicholson and Lydekker 1889 A, p. 952.
Orr, H. 1885 A.
Owen, R. 1839 C. (On Lepidosiren annectens.)
Parker, W. K. 1879 B, p. 31.
Röse, C. 1892 B.
 1895 A, p. 566.
Rohon, J. V. 1898 A.
Ryder, J. A. 1896 A.
Schneider A. 1886 A.
Semon, R. 1899 A, p. 75.
Stannius, H. 1854 A.
Steinmann and Döderlein 1890 A, p. 553.
Stephan, P. 1900 A. ("Dipnoïques.")
Teller, F. 1891 A.
Thacher, J. K. 1877 A.
Traquair, R. H. 1900 B, p. 521.
Wiedersheim R. 1889 A, p. 430.
Woodward, A. S. 1888 E.
 1891 A, pp. 20, 234.
 1898 B, p. 60.
Zittel, K. A. 1886 A. (On Ceratodus.)
 1890 A, p. 122.

Order CTENODIPTERINI Pander.

Pander, C. H. 1858 A.
Agassiz, L. 1846 A, p. 44. ("Diptériens.")
Eichwald, E. 1860 A, p. 1534. ("Cténodiptériens.")
Haeckel, E. 1895 A, p. 263. (Ctenodipneusta.)
Huxley, T. H. 1861 B, p. 18. (Ctenododipterini.)
Zittel, K. A. 1890 A, p. 125. (Ctenodipterini.)

DIPTERIDÆ.

Owen, R. 1860 E, p. 129.
Günther, A. 1872 A, p. 554. (Ctenodipteridæ.)
 1880 A, p. 359. (Ctenodipteridæ.)
Quenstedt, F. A. 1852 A, p. 228. (Dipterini.)
 1885 A, p. 349. (Dipterini.)
Steinmann and Döderlein 1890 A, p. 555.
Woodward A. S. 1891 A, p. 235.
 1898 B, p. 62. (Ctenodontidæ, part.)

DIPTERUS Sedgw. and Murch. Type *D. valenciennesi* Sedgw. and Murch.

Sedgwick and Murchison, 1828, Trans. Geol. Soc. Lond. (2), iii, p. 143.
Agassiz, L. 1843 A.
 1843 B, ii, pt. i, p. 3 (1833) (Catopterus, type *C. analis*); p. 112 (1835) (Dipterus).
 1844 A.
 1844 B, pp. 5, 29. (Polyphractus.)
Atthey, T. 1868 A.
Bridge, T. W. 1898 A, p. 367.
Cope, E. D. 1878 A, p. 293.
Dean, B. 1895 A, p. 121, with figures.
Dollo, L. 1896 A.
Eastman, C. R. 1900 B, p. 37.
Egerton, P. H. 1859 A, p. 125.
Eichwald, E. 1860 A, p. 1535.
Emery, C. 1897 B, p. 147.
Günther, A. 1871 A, p. 428.
 1872 A, p. 556.
Hancock and Atthey 1868 A, p. 370.
 1868 B, p. 54.
 1871 A.
Huxley, T. H. 1861 B, p. 13, figs. 9, 10.
McCoy, F. 1855 A, p. 590.
Miall, L. C. 1878 B.
Miller, H. 1859 A, pl. v.
Miller, S. A. 1889 A, p. 596.
Newberry, J. S. 1875 A, p. 8.
 1889 A, p. 87.
Pander, C. H. 1858 A, p. 6, pls. i–v.
Pictet, F. J. 1854 A, p. 192.
Rohon, J. V. 1898 A.
Steinmann and Döderlein 1890 A, p. 555.
Traquair, R. H. 1878 A, p. 1.
 1888 B, p. 507.
Woodward, A. S. 1891 A, p. 235.
 1893 C.
 1898 B, p. 63.
Woodward and Sherborn 1890 A, p. 69.
Zittel, K. A. 1890 A, p. 125, fig. 135.

Dipterus calvini Eastman.

Eastman, C. R. 1900 B, p. 38, fig. 7.
Udden, J. A. 1899 A, p. 494.
 Devonian (Cedar Valley limestone); Iowa.

Dipterus contraversus Hay.

Hay, O. P. 1899 E, p. 786.
Eastman, C. R. 1900 B, p. 37.
Newberry, J. S. 1889 A, p. 119, pl. xxvii, fig. 33. [D. (Ctenodus) radiatus; preoccupied.]
Woodward, A. S. 1891 A, p. 242. [Dipterus (Ctenodus) radiatus.]
 Devonian (Catskill); Pennsylvania.

Dipterus costatus Eastman.

Eastman, C. R. 1900 B, p. 39, fig. 4.
 Devonian (Upper); Iowa.

Dipterus flabelliformis Newb.

Newberry, J. S. 1889 A, p. 90, pl. xvi, fig. 21. [D. (Ctenodus).]
Eastman, C. R. 1900 B, p. 37.
Newberry, J. S. 1897 A, p. 302. (Ctenodus.)
Woodward, A. S. 1891 A, p. 242.
 Devonian (Chemung); Pennsylvania.

Dipterus fleisheri (Newb.).

Newberry, J. S. 1897 A, p. 302, pl. xxiv, fig. 25. (Ctenodus.)
Eastman, C. R. 1900 B, p. 37.
 Devonian ("Catskill"); Pennsylvania.

Dipterus ithacensis Williams.

Williams, H. S. 1882 A.
Woodward, A. S. 1891 A, p. 243.
 Devonian (Chemung); New York.

Dipterus minutus Newb.

Newberry, J. S. 1889 A, p. 91, pl. xxvii, fig. 26. [D. (Ctenodus).]
Eastman, C. R. 1900 B, p. 37.
Woodward, A. S. 1891 A, p. 242.
Devonian (Chemung); Pennsylvania.

Dipterus mordax Eastman.

Eastman, C. R. 1900 B, p. 39, figs. 6, 8.
Devonian (Upper); Iowa.

Dipterus nelsoni Newb.

Newberry, J. S. 1889 A., p 89, pl. xxvii, figs. 19, 20. [D. (Ctenodus) nelsoni.]
Dana, J. D. 1896 A, p. 617, fig. 968. (Ctenodus.)
Eastman, C. R. 1899 F, p. 322.
1900 B, p. 37.
Newberry, J. S. 1889 A, p. 90, pl. xxvii, figs. 22, 23. [D. (Ctenodus) levis.]
Williams, H. S. 1887 A, p. 62, pl. iii, fig. 1 (D. nelsoni); pp. 63, 91, pl. iii, fig. 2 (D.? lævis, or D. alleganensis).
Woodward, A. S. 1891 A, p. 242. (D. nelsoni, D. levis.)
Devonian (Chemung); Pennsylvania, New York.

Dipterus sherwoodi Newb.

Newberry, J. S. 1875 A, p. 61, pl. lviii, figs. 17-17b.
Dana, J. D. 1896 A, p. 617, fig. 967.
Eastman, C. R. 1900 B, p. 37.
Lesley, J. P. 1892 A, p. 1458.
Miller, S. A. 1889 A, p. 596, fig. 1128.
Newberry, J. S. 1889 A, p. 118, pl. xxvii, figs. 3, 3b. [D. (Ctenodus).]
Woodward, A. S. 1891 A, p. 242.
Devonian (Catskill); Pennsylvania.

Dipterus uddeni Eastman.

Eastman, C. R. 1900 B, p. 37, figs. 5, 5^1,
Devonian (Cedar Valley limestone); Iowa.

PALÆDAPHUS Van Beneden and de Koninck. Type *P. insignis* Van Beneden and de Koninck.

Van Beneden and de Koninck, 1864 A, p. 143, pls. i, ii.
Fritsch, A. 1889 B (1888), p. 88.
Miller, S. A. 1889 A, p. 599. (Heliodus.)
Newberry, J. S. 1875 A, p. 62. (Heliodus.)
1889 A, p. 85. (Heliodus.)
Nicholson and Lydekker, 1889 A, p. 957.
Traquair, R. H. 1878 A, p. 12.
Woodward, A. S. 1891 A, p. 243.
Zittel, K. A. 1890 A, p. 128.

Palædaphus lesleyi (Newb.).

Newberry, J. S. 1875 A, p. 64, pl. lviii, fig. 18. (Heliodus.)
Lesley, J. P. 1892 A, p. 1461. (Heliodus.)
Miller, S. A. 1889 A, p. 599, fig. 1136. (Heliodus.)
Newberry, J. S. 1889 A, p. 86, pl. xviii, fig. 3. (Heliodus.)
Woodward, A. S. 1891 A, p. 244.
Devonian (Chemung); Pennsylvania.

CONCHODUS McCoy. Type *C. ostreaformis* McCoy.

McCoy, F. 1848 A, p. 312.
1855 A, p. 593.
Miller, S. A. 1889 A, p. 592.
Pictet, F. J. 1854 A, p. 269.
Rohon, J. V. 1898 A.
Woodward, A. S. 1891 A, p. 245.

Conchodus plicatus Dawson.

Dawson, J. W. 1868 A, p. 209, fig. 53.
1878 A, p. 209, fig. 53.
Miller, S. A. 1889 A, p. 592, fig. 1115.
Woodward, A. S. 1891 A, p. 255.
Coal-measures; Nova Scotia.

GANORHYNCHUS Traquair. Type *G. woodwardi* Traquair.

Traquair, R. H. 1873 A.
Miller, S. A. 1892 A, p. 715.
Woodward, A. S. 1891 A, p. 245.

Ganorhynchus beecheri Newb.

Newberry, J. S. 1889 A, p. 95, pl. xix, fig. 2.
Woodward, A. S. 1891 A, p. 246.
Devonian (Chemung); Pennsylvania.

Ganorhynchus oblongus Cope.

Cope, E. D. 1892 L, p. 225.
Devonian (Catskill): Pennsylvania.

PHANEROPLEURIDÆ.

Collenge, W. E. 1893 A, p. 3. (Phaneropleuron.)
Cope, E. D. 1878 A, p. 293. (Phaneropleuron.)
1887 O, p. 1018. (Haplistia.)
1889 R, p. 856. (Haplistia.)
1891 B, p. 460. (Haplistia.)
Günther, A. 1872 A, p. 555.
1880 A, p. 360.
1881 A, p. 687.
Haeckel, E. 1895 A, p. 262.
Huxley, T. H. 1861 B, p. 24. (Phaneropleurini.)
1861 C, (Phaneropleuron.)
Jaekel, O, 1890 B, p. 1.
Klaatsch, H. 1896 A, p. 316.
Steinmann and Döderlein, 1890 A, p. 554.
Traquair, R. H. 1871 A.
1875 C, p. 394.
1893 D, p. 121.
Woodward, A. S. 1891 A, p. 247. (Phaneropleuron.)

SCAUMENACIA Traquair. Type *S. curta* (Whiteaves).

Traquair, R. H. 1893 C, p. 262.
Dollo, L. 1896 A.
Fritsch, A. 1889 B, p. 66 (1888). (Phaneropleuron.)
Traquair, R. H. 1890 F, p. 393. (Phaneropleuron.)
    1893 D, p. 118.
Woodward, A. S. 1898 B, p. 71.

Scaumenacia curta (Whiteaves).

Whiteaves, J. F. 1881 C, p. 29. (Phaneropleuron.)
Bridge, T. W. 1898 A, p. 368.
Dana, J. D. 1896 A, p. 617, fig. 969. (Phaneropleuron.)
Jaekel, O, 1890 B, p. 2.
Traquair, R. H. 1890 A, p. 15.
    1890 F, p. 393. (Phaneropleuron.)
Traquair, R. H. 1893 C, p. 262.
    1900 B, p. 520
Whiteaves, J. F. 1886 A, p. 354. (Phaneropleuron.)
    1883 B, p. 160. (Phaneropleuron.)
    1881 C, p. 29. (Phaneropleuron.)
    1887 A, p. 108, pl. x, figs. 2–2*e*. (Phaneropleuron.)
    1889 A, p. 91, pl. v, fig. 3. (Phaneropleuron.)
    1891 A, p. 495. (Phaneropleuron.)
Woodward, A. S. 1891 A, p. 248. (Phaneropleuron.)
    1893 C.
    1898 B, p. 22, fig. 20; p. 71. (Phaneropleuron.)
  Devonian (Upper); Canada.

Order SIRENOIDEI Müller.

Müller, J. 1843 A, p. 217.
Bischoff, T. L. W. 1840 A, pls. i–viii. (Lepidosiren.)
Bridge, T. W. 1898 A.
Cope, E. D. 1889 R, p. 854.
    1898 B, p. 29.
Gadow, H. 1898 A, p. 11.
Gill, T. 1896 A, p. 130.
Günther, A. 1870 A, p. 321.
    1872 A, p. 554. (Sirenidæ.)
Günther, A. 1881 A, p. 686. (Sirenidæ.)
Kölliker, A. 1859 A.
Miall, L. C. 1878 A, p. 12.
Müller, J. 1846 C, p. 201.
Owen, R. 1866 A.
Wiedersheim, R. 1880 B. (Lepidosiren.)
Woodward, A. S. 1891 A, p. 235, part.
    1898 B, p. 61, part.
Zittel, K. A. 1890 A, p. 130.

CTENODONTIDÆ.

Cope, E. D. 1889 R, p. 854. (Lepidosirenidæ, part.)
Traquair, R. H. 1888 A, p. 61.
    1893 D, p. 121.
Woodward, A. S. 1891 A. p. 250.
    1898 B, p. 62.

CTENODUS Agassiz. Type *C. cristatus* Agassiz.

Agassiz, L. 1843 B (1838), p. 137.
    1844 A.
    1844 B, p. 122.
Atthey, T. 1868 A.
    1875 A.
Barkas, W. J. 1873 A, pp. 27, 113.
    1877 A, pls. i–v.
    1878 A.
Bridge, T. W. 1898 A, p. 367.
Collinge, W. E. 1893 A, p. 4.
Cope, E. D. 1878 A, p. 293.
    1881 K, p. 162.
Dollo, L. 1896 A.
Fritsch, A. 1889 B (1888), pp. 66, 93.
Günther, A. 1871 A, p. 428.
Hancock and Atthey 1868 A, p. 357.
    1868 B, p. 54.
    1871 A.
    1872 A, p. 257.
Jaekel, O. 1890 B, p. 6.
Miall, L. C. 1874 B, pl. xlvii.
    1878 B.
    1880 A, p. 289.
Miller, S. A. 1889 A, p. 593.
Pictet, F. J. 1854 A, p. 269.
Steinmann and Döderlein 1890 A, p. 555.
Woodward, A. S. 1888 E.
    1891 A, p. 250.
Woodward and Sherborn 1890 A, p. 51.
Zittel, K. A. 1890 A, p. 127.

Ctenodus wagneri Newb.

Newberry, J. S. 1889 A, p. 172, pl. xxvii, fig. 30.
    1884 A. (No description.)
    1885 A, p. 121. (No description.)
Woodward, A. S. 1891 A, p. 255.
  Devonian (Cleveland shale); Ohio.

SAGENODUS Owen. Type *S. inæqualis* Owen.

Owen, R. 1867 B, p. 365, pl. xii.
Barkas, W. J., 1874, Month. Rev. Dental Surg., ii, p. 538. (Petalodopsis, type *P. mirabilis*.)
Cope, E. D. 1877 E, p. 192. (Ptyonodus, type *P. vinslovii*.)
    1881 K, p. 162. (Ptyonodus.)
    1897 C.
Fritsch, A. 1889 B (1888), p. 66. (Ctenodus, in part.)
Gaudry, A. 1883 A, p. 239. (Megapleuron, type *M. rochei*.)
Hancock and Atthey 1868 A, p. 347.
    1871 A. (Ctenodus, in part.)
    1872 A, p. 272. (Ctenodus, in part.)

Hay, O. P. 1900 A, p. 100.
Jaekel, O. 1890 B, p. 7. (Hemictenodus.)
Williston, S. W. 1899 D, p. 175.
Woodward, A. S. 1890 A, p. 394. (Ptyonodus, Hemictenodus.)
1891 A, p. 255. (Sagenodus.)
Woodward and Sherborn 1890 A, p. 50. (Syn. of Ctenodus.)

Sagenodus angustus (Newb.).

Newberry, J. S. 1897 A, p. 303, pl. xxiv, fig. 26. (Ctenodus.)
Dean, B., in Newberry, J. S. 1897 A, p. 303. (Sagenodus.)
Eastman, C. R. 1900 B, p. 37. (Dipterus.)
Devonian (Chemung); Pennsylvania.

Sagenodus copeanus Williston.

Williston, S. W. 1899 D, p. 178, pls. xxviii, xxxv-xxxvii.
Coal-measures; Kansas.

Sagenodus dialophus (Cope).

Cope, E. D. 1878 B, p. 528. (Ctenodus.)
1881 K, p. 162. (Ctenodus.)
1888 B B, p. 285. (Ctenodus.)
Williston, S. W. 1899 D, p. 176.
Woodward A. S. 1891 A, p. 261. (Sagenodus.)
Permian; Texas.

Sagenodus foliatus Cope.

Cope, E. D. 1897 C, pp. 76, 77, pl. i, fig. 1.
Hay, O. P. 1900 A, p. 107.
Williston, S. W. 1899 D, p. 177.
Coal-measures; Illinois.

Sagenodus fossatus (Cope).

Cope, E. D. 1877 N, p. 53. (Ctenodus.)
Case, E. C. 1900 A, p. 705, pl. i, figs. 10*a*, 10*b*.
Cope, E. D. 1888 B B, p. 285. (Ctenodus.)
Williston, S. W. 1899 D, p. 176.
Woodward, A. S. 1891 A, p. 261.
Permian; Illinois.

Sagenodus gurleyanus (Cope).

Cope, E. D. 1877 N, p. 54. (Ctenodus.)
Case, E. C. 1900 A, p. 704, pl. i, figs. 8*a*–8*c*.
Cope, E. D. 1881 K, p. 162. (Ctenodus.)
1888 B B, p. 285. (Ctenodus.)
Hay, O. P. 1899 E, p. 785.
Miller, S. A. 1889 A, p. 593. (Ctenodus gurleianus.)
Williston, S. W. 1899 D, p. 176.
Woodward, A. S. 1891 A, p. 261.
Permian; Illinois.

Sagenodus heterolophus (Cope).

Cope, E. D. 1883 K, p. 109. (Ctenodus.)
Case, E. C. 1900 A, p. 706.
Williston, S. W. 1899 D, p. 176.
Woodward, A. S. 1891 A, p. 261.
Permian; Illinois.

Sagenodus jugosus Hay.

Hay, O. P. 1900 A, p. 107.
Newberry, J. S. 1875 A, p. 60. (Ctenodus reticulatus; not of Newberry and Worthen, 1870.)
Woodward, A. S. 1891 A, p. 261. (Sagenodus reticulatus.)
Coal-measures; Ohio.

Sagenodus lacovianus Cope.

Cope, E. D. 1897 C, p. 79, pl. i, fig. 5.
1897 C, p. 79, pl. i, fig. 4. (S. conchiolepis.)
Hay, O. P. 1900 A, p. 108.
Williston, S. W. 1899 D, p. 177. (S. lacovianus, S. conchiopsis.)
Coal-measures; Illinois.

Sagenodus occidentalis (Newb. and Worth.).

Newberry and Worthen 1866 A, p. 19, fig. 2. (Rhizodus.)
Cope, E. D. 1897 C, p. 75 (S. occidentalis); p. 81, pl. i, fig. 7 (S. browniæ).
Hay, O. P. 1899 E, p. 787. (Megalichthys.)
1900 A, p. 101.
Miller, S. A. 1889 A, p. 611, fig. 1173. (Rhizodus.)
Newberry, J. S. 1889 A, p. 192. (Rhizodus.)
Newberry and Worthen 1870 A, pl. iv, fig. 1. (Rhizodus.)
Williston, S. W. 1899 D, p. 177.
Woodward, A. S. 1891 A, p. 348. (Strepsodus?).
Coal-measures; Illinois.

Sagenodus ohionensis (Cope).

Cope, E. D. 1875 D, p. 410, pl. xlv, fig. 2. (Ctenodus.)
1873 O, p. 341. (Leptophractus obsoletus, part.)
1874 S, p. 91. (Ctenodus, without specific name.)
Newberry, J. S. 1875 A, p. 60. (Ctenodus.)
1889 A, p. 226; woodcut, fig. 3. (Ctenodus.)
Woodward, A. S. 1891 A, p. 262.
Coal-measures; Ohio.

Sagenodus paucicristatus (Cope).

Cope, E. D. 1877 N, p. 53. (Ceratodus.)
Case, E. C. 1900 A, p. 707, pl. i, figs. 11*a*, 11*b*.
Cope, E. D. 1877 E, p. 192. (Ptyonodus.)
1881 K, p. 162. (Ptyonodus.)
1888 BB, p. 285. (Ptyonodus.)
Williston, S. W. 1899 D, p. 175.
Woodward, A. S. 1891 A, p. 261.
Permian; Illinois.

Sagenodus periprion (Cope).

Cope, E. D. 1878 B, p. 527. (Ctenodus.)
1881 K, p. 162. (Ctenodus.)
1888 B B, p. 285. (Ctenodus.)
Williston, S. W. 1899 D, p. 176.
Woodward, A. S. 1891 A, p. 261.
Permian; Texas.

Sagenodus porrectus (Cope).

Cope, E. D. 1878 B, p. 527. (Ctenodus.)
1881 K, p. 162. (Ctenodus.)
1888 B B, p. 285. (Ctenodus.)
Williston, S. W. 1899 D, p. 176.
Woodward, A. S. 1891 A, p. 261.
Permian; Texas.

Sagenodus pusillus (Cope).

Cope, E. D. 1877 E, p. 191. (Ctenodus.)
Case, E. C. 1900 A, p. 705, pl. i, figs. 9a, 9b.
Cope, E. D. 1881 K, p. 162. (Ctenodus.)
1888 BB, p. 285. (Ctenodus.)
Williston, S. W. 1899 D, p. 176.
Woodward, A. S. 1891 A, p. 261.
Permian; Illinois.

Sagenodus quadratus (Newb.).

Newberry, J. S. 1873 A, p. 343, pl. xxxix, fig. 8. (Rhizodus.)
Cope, E. D. 1897 C, pp. 76, 77.
Eastman, C. R. 1900 B, p. 37. (Dipterus.)
Hay, O. P. 1900 A, p. 103.
Lesley, J. P. 1889 A, p. 877, figure. (Rhizodus.)
1895 A, pl. dlxxi. (Rhizodus.)
Newberry, J. S. 1889 A, p. 192. (Rhizodus.)
Williston, S. W. 1899 D, p. 176.
Woodward, A. S. 1891 A, p. 262. (Sagenodus?.)
Coal-measures; Ohio, Illinois.

Sagenodus quincunciatus Cope.

Cope, E. D. 1897 C, p. 80, pl. i, fig. 6.
Hay, O. P. 1900 A, p. 109.
Newberry and Worthen 1870 A, p. 349, pl. iii, figs. 13, 14. (Rhizodus reticulatus, part.)
Williston, S. W. 1899 D, p. 177.
Coal-measures; Illinois.

Sagenodus reticulatus (Newb. and Worth.).

Newberry and Worthen 1870 A, p. 349, pl. iii, fig. 9, not figs. 13, 14. (Rhizodus.)
Cope, E. D. 1897 C, p. 78, pl. i, figs. 2, 3 (Sagenodus reticulatus); p. 81, pl. i, fig. 8 (S. magister).
Hay, O. P. 1900 A, p. 106.
Williston, S. W. 1899 D, p. 177. (S. reticulatus, S. magister.)
Woodward, A. S. 1891 A, p. 262. (Sagenodus?.)
Coal-measures; Illinois.

Sagenodus serratus (Newb.).

Newberry, J. S. 1875 A, p. 59, pl. lviii, figs. 15, 16. (Ctenodus.)
Miller, S. A. 1899 A, p. 593, fig. 1119. (Ctenodus.)
Newberry, J. S. 1889 A, p. 226, pl. xxvii, fig. 31. (Ctenodus.)
Williston, S. W. 1899 D, p. 176.
Woodward, A. S. 1891 A, p. 261. (Sagenodus.)
Coal-measures; Ohio.

Sagenodus textilis Hay.

Hay, O. P. 1899 E, p. 786.
Cope, E. D. 1897 C, p. 82, pl. i, fig. 9. (S. gurleianus; preoccupied by Cope, 1877.)
Hay, O. P. 1900 A, p. 110.
Williston, S. W. 1899 D, p. 177. (S. gurleianus.)
Coal-measures; Illinois.

Sagenodus vabasensis (Cope).

Cope, E. D. 1883 K, p. 110. (Ctenodus.)
Case, E. C. 1900 A, p. 704, pl. i, fig. 7.
Cope, E. D. 1888 BB, pp. 285, 288. (Ctenodus.)
Williston, S. W. 1899 D, p. 176.
Woodward, A. S. 1891 A, p. 261.
Permian; Illinois.

Sagenodus vinslovii (Cope).

Cope, E. D. 1875 T, p. 410. (Ceratodus.)
Case, E. C. 1900 A, p. 703, pl. i, figs. 6a, 6b.
Cope, E. D. 1877 E, p. 192. (Ptyonodus.)
1877 N, p. 53. (Ceratodus.)
1881 K, p. 162. (Ptyonodus.)
1888 BB, p. 285. (Ptyonodus.)
Williston, S. W. 1899 D, p. 176.
Woodward, A. S. 1891 A, p. 262.
Permian; Illinois.

GNATHORHIZA Cope. Type *G. serrata* Cope.

Cope, E. D. 1883 H, p. 629.
Miller, S. A. 1889 A, p. 598.
The systematic position of this genus is very problematical.

Gnathorhiza serrata Cope.

Cope, E. D. 1883 H, p. 629.
1888 BB, p. 286.
Permian; Texas.

CERATODONTIDÆ.

Gill, T. 1872 C, p. 22.
Cope, E. D. 1889 R, p. 854.
Gill, T. 1893 A, p. 130.
Günther, A. 1872 A, p. 554. (Sirenidæ, in part.)
Steinmann and Döderlein 1890 A, p. 555.
Quenstedt, F. A. 1885 A, p. 294. (Ceratodontia.)
Van Wijhe, J. W. 1882 A. (Ceratodus.)
Woodward, A. S. 1891 A, p. 264. (Lepidosirenidæ, part.)

CERATODUS Agassiz. Type *C. latissimus* Agassiz.

Agassiz, L. 1843 B (1838), iii, p. 129.
1844 A.
Balfour, F. M. 1881 A.
Barkas, W. J. 1877 A.
1878 A.
Beyrich, E. 1850 A, p. 153.
Bridge, T. W. 1898 A, p. 350.
Bridge, W. J, 1879 A.
Brown, C. 1900 A, p. 172,
Cope, E. D. 1893 N, p. 1061.
Davidoff, M. 1883 A.
Dollo, L, 1896 A.
Gadow, H. 1889 A, p. 458.
Gadow and Abbott 1895 A.
Gegenbaur, C. 1872 B.
1876 A.
1895 A, figs. 2, 3.
1898 A, figures.

Günther, A. 1870 A, p. 323.
1871 A.
1871 B.
1872 A.
1880 A, p. 357.
Haeckel, E. 1895 A, p. 264.
Haswell, W. A. 1883 A.
Howes, G. B. 1887 A.
Huxley, T. H. 1876 A.
1876 B, xiii, pp. 389, 411.
1880 B, p. 660.
Klaatsch, H. 1890 A, p. 209.
1896 A, p. 316.
Krefft, G. 1870 A.
Miall, L. C. 1878 A, p. 18.
1878 B.
Mivart, St. G. 1879 A.
Mollier, S. 1893 A, p. 86 *et seq.*
Newberry, J. S. 1875 A, pp. 9–27.
Nicholson and Lydekker 1889 A, p. 958.
Oldham, T. 1859 A.
Pictet, F. J. 1854 A, p. 267.
Pollard, H. B. 1894 B.
Quenstedt, F. A. 1852 A, p. 186.
1885 A, p. 295.
Reis, O. M. 1897 A, p. 132.
Röse, C. 1892 B.
Salensky W. 1899 A, p. 181.
Semon, R, 1899 A, p. 78.
Stephan, P. 1900 A, p. 307.
Teller, F. 1891 A.
Thacher, J. K. 1877 A.
Tomes, C. S. 1898 A, p. 264.
Traquair, R. H. 1900 B, p. 521.
Van Wijhe, J. W. 1882 A.
Woodward, A. S. 1888 E.
1891 A, p. 264.
1898 B, p. 64.
Zittel, K. A. 1886 A, p. 258
1890 A, p. 132.

Ceratodus americanus Knight.

Knight, W. C. 1898 A, p. 186, fig. 2.
Jurassic; Wyoming.

Ceratodus eruciferus[1] Cope.

Cope, E. D. 1876 H, p. 259.
1877 G, p. 574. (Arotus?)
Woodward, A. S. 1891 A, p. 275.
Cretaceous (Laramie); Montana.

Ceratodus favosus Cope.

Cope, E. D. 1884 I, p. 28.
1888 BB, p. 286.
Woodward, A. S. 1891 A, p. 274.
Permian; Texas.

Ceratodus güntheri Marsh.

Marsh, O. C. 1878 A, with figure.
King, C. 1878 A, p. 346.
Marsh, O. C. 1878 G, p. 224.
1897 C, p. 507, fig. 67.
Jurassic; Colorado.

Ceratodus hieroglyphus[1] Cope.

Cope, E. D. 1876 H, p. 260.
1877 G, p. 554. (Arotus.)
1885 D, p. 408.
Woodward, A. S. 1891 A, p. 275.
Cretaceous (Laramie); Montana.

Ceratodus robustus Knight.

Knight, W. C. 1898 A, p. 186, fig. 1.
Jurassic; Wyoming.

SYNTHETODUS Eastman. Type, *S. trisulcatus* Eastman.

Eastman, C. R. 1898 A, p. 111.

Synthetodus trisulcatus Eastman.

Eastman, C. R. 1898 A, p. 112, pl. iv, figs. 1–10.
Upper Devonian; Iowa.

Subclass TELEOSTOMI Owen.

Owen, R. 1866 A, p. 7.
References are here given also to the literature of the groups known as *Ganoidei* and *Teleostei.*
Agassiz, L. 1843 B, ii, p. 1. (Ganoidei.)
Balfour, F. M. 1882 A, p. 431. (Ganoidei.)
Baudelot, E. 1873 A.
1873 B.
Baur, G. 1889 E. (Teleostei.)
Beard, J. 1890 A. (Teleostei, Ganoidei.)
Chamberlin, T. C. 1900 A, p. 411. ("Teleostomes.")
Cope, E. D. 1872 C, p. 318 (Ganoidei.); p. 396 (Actinopteri).
1877 N, p. 56. (Hyopomata.)
1877 O, p. 41. (Hyopomata.)
1878 A, p. 292. (Hyopomata.)
1884 I, p. 46. (Hyopomata.)
1884 N, p. 579. (Hyopomata.)
Cope, E. D. 1884 HH. (Hyopomata.)
1885 G. (Hyopomata.)
1887 O, p. 1015.
1889 R, pp. 854, 855.
1890 B.
1891 E.
1891 N, p. 10.
1898 B, pp. 18, 30.
Dean, B, 1895 A, p. 139.
Gadow. H. 1898 A, p. 7.
Gadow and Abbott 1895 A. (Ganoidei, Teleostei.)
Gegenbaur, C. 1895 A.
1898 A.
Gill, T. 1872 C. p. 1.
1873 B.
1873 D.
1893 A, p. 130. ("Teleostomes.")
1896 C, p. 912.

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[1] See the genus of Ichthyodorulites *Euctenius*.

Goeppert, E. 1895 A, p. 158. (Teleostei.)
Günther, A. 1871 A, p. 428. (Ganoidei, Teleostei.)
1872 A, p. 554. (Ganoidei.)
1880 A, p. 373. (Teleostei.)
1881 A, p. 688. (Ganoidei, Teleostei.)
Haeckel, E. 1895 A, p. 244 (Ganoides); p. 252 (Teleostei).
Hallmann, E. 1837 A, p. 52.
Hay, O. P. 1895 A.
1898 C, p. 342.
Hollard, H. 1860 A.
Huxley, T. H. 1858 C. (Teleostei, Ganoidei.)
1861 B, p. 29. (Teleostei.)
1872 A, p. 121 (Ganoidei); p. 130 (Teleostei).
1883 A. (Teleostei.)
Jordan and Evermann 1896 A, p. 97.
Klaatsch, H. 1890 A, p. 155.
1894 A.
Klein, E. F. 1879 A.
1881 A.
1885 A.
Klein, E. F. 1889 A.
Kner, R. 1866 A.
Kölliker, A. 1859 A. (Teleostei, Ganoidei.)
Köstlin, O. 1844 A.
Lütken, C. 1868 B. (Ganoidei, Teleostei.)
1873 A. (Ganoidei.)
Miall, L. C. 1878 A. (Ganoidei.)
Müller, J. 1846 C.
Parker, W. K. 1874 A.
Reis, O. M. 1895 C, p. 162.
Röse, C. 1892 A. (Teleostei.)
Steinmann and Döderlein 1890 A, p. 556.
Stephan, P. 1900 A. ("Téléostéens," "Ganoïdes.")
Traquair, R. H. 1877 B. (Ganoidei.)
Ussow, S. A. 1898 A.
Vaillaint, L. 1883 A.
Woodward, A. S. 1891 A, pp. xxi, 316.
1898 B, p. 69.
Zittel, K. A. 1890 B, p. 133 (Ganoidei); p. 252 (Teleostei).

Superorder CROSSOPTERYGIA.

Baur, G. 1896 C, p. 659.
Bridge, W. J. 1879 A.
Bridge, T. W. 1889 A, p. 118. (Polypterus.)
1896 A, p. 541. (Polypterus.)
1898 A, p. 371.
Brown, C. 1900 A, p. 172.
Chamberlin, T. C. 1900 A, p. 411. ("Crossopterygians.")
Cope, E. D. 1872 C, p. 326.
1877 N, p. 56.
1877 O, p. 41.
1878 A, p. 298.
1885 G, p. 237.
1887 O, p. 1017. (Crossopterygia and Rhipidopterygia.)
1887 S, p. 825.
1889 R, p. 885. (Crossopterygia and Rhipidopterygia.)
1890 B.
1891 B, p. 459 (Rhipidopterygia); p. 460 (Crossopterygia.)
1891 E, p. 480.
1891 N, p. 19. (Crossopterygia, Rhipidopterygia.)
1898 B, p. 30. (Crossopterygia, Rhipidopterygia.)
Davidoff, M. 1880 B. (Polypterus.)
Dean, B. 1895 A, p. 148.
Dollo, L. 1896 A, p. 105.
Emery, C. 1879 B.
Gadow, H. 1898 A, p. 7. (Crossopterygii.)
Gegenbaur, C. 1890 B, p. 104, pl. viii, fig. 6. (Polypterus.)
1895 A.
Gegenbaur, C. 1895 B.
1898 A.
Gill, T. 1872 C, p. 22.
1893 A, p. 180.
Goeppert, E. 1895 A, p. 148.
Günther, A. 1872 A, p. 555.
Haeckel, E. 1895 A, p. 249. (Crossopterygii.)
Hay, O. P. 1899 F, p. 682.
Howes, G. B. 1887 A, p. 19.
Huxley, T. H. 1861 B, p. 24. (Crossopterygidæ, as suborder.)
1866 A.
1872 A, p. 127. (Crossopterygidæ.)
1876 A.
Jaekel, O. 1890 B, p. 8.
Klaatsch, H. 1890 A, p. 218.
1896 A.
Lütken, C. 1873 A, p. 45. (Crossopteri.)
Newberry, J. S. 1873 A, p. 255.
Orr, H. 1885 A.
Osborn, H. F. 1899 I, p. 158.
Pollard, H. B. 1892 A. (Polypterus.)
Reis, O. M. 1897 A, p. 130.
Ryder, J. 1886 A.
Steinmann and Döderlein 1890 A, p. 560.
Traquair, R. H. 1870 A. (Polypterus.)
1875 C, p. 394.
1890 B, p. 517. (Crossopterygii.)
Van Wijhe, J. W. 1882 A, p. 251.
Woodward, A. S. 1891 A, p. 316.
1893 C.
1898 B, p. 69.
Zittel, K. A. 1890 A, p. 168.
1896 A, p. 408.

Superorder RHIPIDISTIA Cope.

Cope, E. D. 1887 O, p. 1017.
1887 O, p. 1018. (Taxistia.)
1889 R, p. 855 (Rhipidistia); p. 856 (Taxistia).
1891 B, p. 460 (Rhipidistia); p. 462 (Taxistia).
Cope, E. D. 1891 E. (Rhipidistia, Taxistia.)
1891 N, p. 19. (Rhipidistia, Taxistia.)
1898 B, pp. 30, 31. (Rhipidistia, Taxistia.)
Traquair, R. H. 1891 A, p. 127.
Woodward, A. S. 1891 A, p. 318.
1898 B, p. 71.

HOLOPTYCHIIDÆ.

Collinge, W. E. 1893 A, p. 5.
Cope, E. D. 1889 R, p. 856.
Günther, A. 1880 A, p. 365.
1881 A, p. 687.
Lütken, C. 1873 A, p. 34. (Cyclodipterini)
Nicholson and Lydekker 1889 A, p. 968.
Owen, R. 1860 E, p. 132.
Rohon, J. V. 1899 A, p. 41.
Steinmann and Döderlein 1890 A, p. 560.
Traquair, R. H. 1889 C.
1900 B, p. 518.
Woodward, A. S. 1891 A, p. 321.
1893 E, p. 450.
1898 B, p. 72.
Zittel, K. A. 1890 A, p. 176. (Cyclodipterini.)

Holoptychius Agassiz. Type *H. nobilissimus* Agassiz.

Agassiz L., 1839, in Murchison's Silur. Syst., p. 599. (Holoptychus, misprint.)
1844 A.
1844 B.
Anderson, J. 1860 A.
1861 A.
Collinge, W. E. 1893 A, p. 6.
Egerton, P. H. 1859 A, p. 126.
Emery, C. 1897 B, p. 147.
Huxley, T. H. 1861 B, p. 5, fig. 5.
Jaekel, O. 1894 B, p. 148.
Klaatsch, H. 1890 A, p. 221.
Leidy, J. 1856 S, p. 162.
Lohest, M. 1888 A, p. 121.
McCoy, F. 1853 A.
1855 A, p. 593.
Miller, H. 1859 A, pl. xiv.
Miller, S. A. 1889 A, p. 599.
Newberry, J. S. 1856 A.
Nicholson and Lydekker 1889 A, p. 968.
Pictet, F. J. 1854 A, p. 145.
Quenstedt, F. A. 1852 A, p. 229.
1885 A, p. 350.
Rohon, J. V. 1892 B.
1899 A, p. 41.
Steinmann and Döderlein 1890 A, p. 561.
Traquair, R. H. 1888 B, p. 512.
1900 B, p. 519.
Williamson, W. C. 1849 A, p. 457, pl. xlii, figs. 21-24.
Woodward, A. S. 1891 A, p. 322.
1892 E.
Young, J. 1866 B, p. 601.
Zittel, K. A. 1890 A, p. 178.

Holoptychius americanus Leidy.

Leidy, J. 1856 S, p. 163, pl. xvi, figs. 9, 10; pl. xvii, figs. 1-3 (not fig. 4).
Cope, E. D. 1892 L, p. 222.
1892 X.
1897 C, p. 72.
DeKay, J. E. 1842 B, p. 385. (H. nobilissimus.)
Eastman, C. R. 1899 F, pp. 321, 327.
Hall, J. 1843 A, p. 281, text figs. 130.² (Holoptychus nobilissimus.)
Lesley, J. P. 1889 A, p. 284, figures. (H. americanus, H. nobilissimus.)
Lohest, M. 1888 A, p. 139. (H. nobilissimus.)
Miller, S. A. 1889 A, p. 599, fig. 1438.
Newberry, J. S. 1873 A, pp. 271, 272.
1889 A, pp. 107, 113, pl. xix, figs. 12, 13.
Redfield, W. C. 1841 A, p. 24. (H. nobilissimus.)
Whitfield and Hovey 1900 A, p. 348.
Williams, H. S. 1887 A, pp. 27, 28. ("Holoptychius.")
Woodward, A. S. 1891 A, p. 326.
Young, J. 1866 B, p. 599.
Devonian (Catskill, Ithaca); Pennsylvania, New York.

Holoptychius filosus Cope.

Cope, E. D. 1892 L, p. 228, pl. vii, fig. 3.
1897 C, p. 72.
Devonian (Chemung); Pennsylvania.

Holoptychius flabellatus Cope.

Cope, E. D. 1897 C, p. 75, pl. ii, fig. 3.
Devonian (Catskill?); Pennsylvania.

Holoptychius giganteus Agassiz.

Agassiz, L. 1844 B, pp. 73, 140, pl. xxiv, figs. 3-10.
Cope, E. D. 1892 L, p. 222.
1897 C, p. 72.
Lohest, M. 1888 A, p. 146, pl. vi, figs. 2, 3; pl. vii, figs. 5, 6.
McCoy, F. 1855 A, p. 594 (H. giganteus); p. 595 (H. princeps).
Newberry, J. S. 1889 A, p. 101, pl. xix, figs. 15, 16.
Woodward, A. S. 1891 A, p. 325.
Devonian; Europe: (Catskill?): Pennsylvania.

Holoptychius granulatus Newb.

Newberry, J. S. 1889 A, p. 100, pl. xx, fig. 9.
Whitfield and Hovey, 1900 A, p. 348.
Woodward, A. S. 1891 A, p. 331.
Devonian (Chemung): Pennsylvania?.

Holoptychius hallii Newb.

Newberry, J. S. 1889 A, p. 114, pl. xx, figs. 10, 10*a*.
Cope, E. D. 1897 C, p. 72.
Woodward, A. S. 1891 A, p. 326.
Devonian (Catskill): New York.

Holoptychius latus Cope.

Cope, E. D. 1897 C, p. 74, pl. ii, fig. 2. [Holoptychius (Glyptolepis).]
Devonian (Catskill?); Pennsylvania.

Holoptychius ? pustulosus Newb.

Newberry, J. S. 1889 A, p. 100, pl. xx, figs. 11, 11*a*.
Woodward, A. S. 1891 A, p. 331.
Devonian (Chemung); Pennsylvania.

Holoptychius quebecensis (Whiteaves).

Whiteaves, J. F. 1889 A, p. 77, pl. v, fig. 4. (Glyptolepis.)
Dana, J. D. 1896 A, p. 618, fig. 970.

Traquair, R. H. 1890 A, p. 17.
1893 C, p. 265. (Gyrolepis.)
1893 D, p. 123. (Glyptolepis.)
Whiteaves, J. F. 1881 A, p. 495. (Glyptolepis microlepidotus, not of Agassiz.)
1883 A, p. 354. (Glyptolepis microlepidotus, not of Agassiz.)
1883 B, p. 162. (Glyptolepis.)
1881 C, pp. 82, 83. (Glyptolepis microlepidotus and G. "near leptopterus.")
Woodward, A. S. 1891 A, p. 336.
Upper Devonian; Province of Quebec, Canada.

Holoptychius ? radiatus Newb.

Newberry, J. S. 1889 A, p. 115, pl. xx, figs. 12–14.
Cope, E. D. 1897 C, p. 72.
Whitfield and Hovey 1900 A, p. 348.
Woodward, A. S. 1891 A, p. 331.
Devonian (Catskill?); Pennsylvania.

Holoptychius serrulatus Cope.

Cope, E. D. 1897 C, p. 71, pl. ii, fig. 1.
Devonian (Catskill?); Pennsylvania.

Holoptychius tuberculatus Newb.

Newberry, J. S. 1889 A, p. 101, pl. xix, fig. 14.
Cope, E. D. 1897 C, p. 73.
Woodward, A. S. 1891 A, p. 331.
Devonian (Chemung); Pennsylvania.

ERIPTYCHIUS Walcott. Type *E. americanus* Walcott.

Walcott, C. D. 1892 A, p. 167.
Chamberlin, T. C. 1900 A, p. 401. (No name.)

Eriptychius americanus Walcott.

Walcott, C. D. 1892 A, p. 167, pl. iv, figs. 5–11.
American Geologist 1891 E. (Holoptychius.)
Cope, E. D. 1893 I.
Dana, J. D. 1896 A, p. 509, fig. 696.
Lower Silurian (Ordovician); Colorado.

DENDRODUS Owen. Type *D. biporcatus* Owen.

Owen, R. 1841 F, p. 4.
Agassiz, L. 1844 B, pp. 61, 84, 144. (Lamnodus, Dendrodus.)
Eichwald, E. 1860 A, p. 1558.
Lohest, M. 1888 A, p. 118.
McCoy, F. 1855 A, p. 597.
Nicholson and Lydekker 1889 A, p. 969.
Owen, R. 1845 B, pp. 171, 175.
1860 E, p. 133.
Pander, C. H. 1860 A, pp. 27, 53.
Pictet, F. J. 1854 A, p. 147.
Quenstedt, F. A. 1852 A, p. 229.
Quenstedt, F. A. 1885 A, p. 351.
Rohon, J. V. 1889 B, p. 1–52, pls. i, ii.
Traquair, R. H. 1889 C, p. 490.
Trautschold, H. 1880 C, p. 139.
1889 B.
Woodward, A. S. 1891 A, p. 338.
Zittel, K. A. 1890 A, p. 177.

Dendrodus arisaigensis Whiteaves.

Whiteaves, J. F. 1898 A, p. 401, fig. 1.
Silurian or Devonian; Nova Scotia.

APEDODUS Leidy. Type *A. priscus* Leidy.

Leidy, J. 1856 S, p. 164.
Miller, S. A. 1889 A, p. 587.
Woodward, A. S. 1891 A, p. 322. (Syn.? of Holoptychius.)
Young, J. 1866 B. (Syn. of Rhizodus.)

Apedodus priscus Leidy.

Leidy, J. 1856 S, p. 165, pl. xvii, figs. 5–7.
Newberry, J. S. 1889 A, p. 108.
Woodward, A. S. 1891 A, p. 340.
Devonian (Catskill); Pennsylvania.

MEGALICHTHYIDÆ nom. nov.

The following authors denominate this family *Rhizodontidæ*.
Collinge, W. E. 1893 A, p. 5.
Nicholson and Lydekker 1889 A, p. 969.
Steinmann and Döderlein 1890 A, p. 561.
Traquair, R. H. 1881 B, p. 179.
Traquair, R. H. 1888 B, p. 514.
1891 A, p. 127.
1900 B, p. 517.
Woodward, A. S. 1891 A, p. 346.
1898 B, p. 74.

MEGALICHTHYS Agassiz and Hibbert. Type *M. hibberti* Agassiz and Hibbert.

Agassiz and Hibbert, in Hibbert, S. 1836 A, p. 202.

Unless otherwise indicated, the name *Rhizodus* of Owen is employed for this genus by the following writers. *Megalichthys* of Agassiz and Hibbert has, however, priority.

Agassiz, L. 1835 A, p. 646. (Megalichthys.)
1844 B, p. 69.
Atthey, T. 1877 A.
Barkas, T. P. 1873 A, p. 41.
Eichwald, E. 1860 A, p. 1571. (Holoptychius.)
Gaudry, A. 1883 A, p. 236.
Hancock and Atthey 1868 A, p. 346.
Hay, O. P. 1899 E, p. 786.
Klaatsch, H. 1890 A, p. 220.
McCoy, F. 1855 A, p. 612.
Miall, L. C. 1875 B, fig. 1.

Miller, S. A. 1889 A, p. 611.
Newberry, J. S. 1868 A, p. 145.
1889 A, pp. 192, 340.
Newberry and Worthen 1866 A, p. 18.
Nicholson and Lydekker 1889 A, p. 970.
Owen, R. 1845 B (1840), p. 55, pls. xxxv-xxxvii. (Rhizodus; type *Megalichthys hibberti* Agassiz and Hibbert.)
Roemer, F. 1865 A.
Steinmann and Döderlein 1890 A, p. 561.
Stock, T. 1881 B, p. 77.
Traquair, R. H. 1875 B.
1877 C.
1891 A, p. 127.
Woodward, A. S. 1891 A, p. 342.
1898 B, p. 74.
Woodward and Sherborn 1890 A, p. 178.
Young, J. 1866 B, p. 599.
Zittel, K. A, 1890 A, p. 182.

Megalichthys anceps (Newb.).

Newberry, J. S. 1888 C. (Rhizodus.)
Dana, J. D. 1888 A. (Rhizodus.)
Newberry, J. S. 1889 A, p. 191, pl. xliii, fig. 1. (Rhizodus.)
Woodward, A. S. 1891 A, p. 346. (Rhizodus.)
Subcarboniferous (St. Louis); Illinois.

Megalichthys angustus Newb.).

Newberry, J. S. 1856 B, p. 99. (Rhizodus.)
Hay, O. P. 1899 E, p. 787.
Hitchcock, C. H. 1868 B. (Rhizodus.)
Lesley, J. P. 1889 A, p. 875, figure. (Rhizodus.)
Newberry, J. S. 1868 A, p. 145. (Rhizodus.)
1873 A, p. 342, pl. xxxix, fig. 6. (Rhizodus.)
1889 A, p. 192. (Rhizodus.)
Woodward, A. S. 1891 A, p. 348. (Rhizodus.)
Coal-measures; Ohio.

Megalichthys incurvus (Newb.).

Newberry, J. S. 1856 B, p. 99. (Rhizodus.)
Hay, O. P. 1899 E, p. 787.
Woodward, A. S. 1891 A, p. 348. (Rhizodus.)
Coal-measures; Ohio.

Megalichthys lancifer (Newb.).

Newberry, J. S. 1856 B, p. 99. (Rhizodus.)
Dawson, J. W. 1863 D, p. 11. (Rhizodus.)
1868 A, p. 210, fig. 56*a*. (R. lancifer?.)
1878 A, p. 210, fig. 56*a*. (Rhizodus.)
1894 A, p. 269. (Rhizodus.)
Hay, O. P. 1899 E, p. 787.
Lesley, J. P. 1889 A, p. 876, figure. (Rhizodus.)
Newberry, J. S. 1873 A, p. 342, pl. xxxix, fig. 9. (Rhizodus.)
1889 A, p. 192. (Rhizodus.)
Woodward, A. S. 1891 A, p. 348. (Rhizodus.)
Coal-measures; Ohio.

RABDIOLEPIS Emmons. Type *R. speciosa* Emmons.

Emmons, E. 1857 A, p. 45.
1860 A, p. 183.

Rabdiolepis speciosa Emmons.

Emmons, E. 1857 A, p. 45, fig. 17.
Cope, E. D. 1875 V, p. 30. (Rhabdolepis.)
Emmons, E. 1860 A, p. 183, fig. 161.
Wheatley, C. M. 1861 A, p. 44. (Radiolepis).
Woodward, A. S. 1891 A, p. 354.
Triassic (Chatham); North Carolina, Pennsylvania?.

STREPSODUS Young. Type *Holoptychius sauroides* Binney.

Young, J. 1866 B, p. 602.
Barkas, T. P. 1873 A, p. 32, figs. 113-119 (Strepsodus); pp. 75, 94, figs. 194, 223, 224 (Labyrinthodontosaurus).
Hancock and Atthey 1868 A, p. 353.
1870 A.
Ward, J. 1890 A, p. 160.
Woodward, A. S. 1891 A, p. 348.
Young J. 1856 B, p. 601, fig. 7. (Dendroptychius.)

Strepsodus arenosus Hay.

Hay, O. P. 1900 A, p. 113, fig. 3.
Subcarboniferous; Pennsylvania.

Strepsodus dawsoni Hay.

Hay, O. P. 1900 A, p. 114.
Dawson, J. W. 1868 A, p. 210, fig. 56*b*. (Rhizodus lancifer, part.)
1878 A, p. 210, fig. 56*b*. (R. lancifer, part.)
Coal-measures; Nova Scotia.

Strepsodus hardingi (Dawson).

Dawson, J. W. 1868 A, p. 255, fig. 77*a–d*. (Rhizodus.)
Dana, J. D. 1888 A. (Rhizodus.)
Dawson, J. W. 1878 A, p. 255, fig. 77*a–d*. (Rhizodus.)
Hay, O. P. 1900 A, p. 111.
Lesley, J. P. 1889 A, p. 876, figure. (Rhizodus.)
Woodward, A. S. 1891 A, p. 353.
Subcarboniferous; Nova Scotia.

RHIZODOPSIS Young. Type *Holoptychius granulatus* Salter.

Young, J. 1866 B, p. 596.
Barkas, T. P. 1873 A, p. 23, figs. 59–69 (Rhizodopsis); p. 38, figs 143, 144 (Orthognathus, type *O. reticulosus*).
Hancock and Atthey 1868 A, p. 349.
Nicholson and Lydekker 1889 A, p. 970.
Owen R. 1867 B, p. 325 (Dittodus, part); p. 354 (Ganalodus part); p. 366 (Characodus); p. 370 (Gastrodus).
Roemer, F. 1865 A. (Rhizodus, part.)

Traquair, R. H. 1881 B, p. 169.
Ward, J. 1890 A, p. 161, pl. viii, figs. 5–7.
Williamson, W. C. 1849 A, p. 457, pl. xlii, figs. 21–23. (Holoptychius, part.)
Woodward, A. S. 1891 A, p. 354.
Young, J. 1866 B, p. 596, fig. 8.
Zittel, K. A. 1890 A, p. 181.

Rhizodopsis? mazonius Hay.

Hay, O. P. 1900 A, p. 110.
Coal-measures, Illinois.

CŒLOSTEUS Newb. Type *C. ferox* Newb.

Newberry, J. S. 1887 B.
Cope, E. D. 1890 H.
Miller, S. A. 1892 A, p. 714.
Newberry, J. S. 1889 A, p. 188.
Woodward, A. S. 1891 A, p. 346.

Cœlosteus ferox Newb.

Newberry, J. S. 1887 B.
Cope, E. D. 1888 P.
Newberry, J. S. 1889 A, p. 190, pl. xxxv, figs. 1–4.
Woodward, A. S. 1891 A, p. 346.
Subcarboniferous (St. Louis): Illinois.

SAURIPTERIS Hall. Type *S. taylori* Hall.

Hall, J. 1843 A, p. 282.
1840, Ann. Rep. Geol. Surv., N. Y., 4th dist., p. 453. (Sauritolepis, nom. nud.)
1843 A, p. 282, footnote. (Sauritolepis.)
Newberry, J. S. 1873 A, pp. 271, 272. (Holoptychius? and Bothriolepis?.)
Woodward, A. S. 1890 A, p. 393.
1891 A, p. 364. (Sauripterus.)

Sauripteris taylori Hall.

Hall, J. 1843 A, p. 282, text figs. 130^1, 131.
Newberry, J. S. 1873 A, pp. 271, 272. (Holoptychius? and Bothriolepis?.)
1889 A. p. 113. (Sauripterus.)
Lesley, J. P. 1889 A, p. 94 (Bothriolepis); p. 286, figure (Holoptychius); *Errata*, p. xi (Sauripteris).
Whiteaves, J. F. 1880 A, p. 133.
Whitfield and Hovey, 1900 A, p. 348.
Williams, H. S. 1887 A, p. 101. (Sauropterus.)
Woodward, A. S. 1890 A, p. 393.
1891 A, p. 365.
Devonian (Catskill); Pennsylvania.

EUSTHENOPTERON Whiteaves. Type *E. foordii* Whiteaves.

Whiteaves, J. F. 1881 A, p. 496.
Miller, S. A. 1889 A, p. 597.
Nicholson and Lydekker 1889 A, p. 970.
Traquair, R. H. 1900 B, p. 517.
Whiteaves, J. F. 1883 A, p. 354.
1883 B, p. 161.
1881 C, p. 30.
1899 A, p. 411.
Woodward, A. S. 1891 A, p. 361.
1898 B, p. 76.
Zittel, K. A. 1890 A, p. 180.

Eusthenopteron foordii Whiteaves.

Whiteaves, J. F. 1881 A, p. 496.
Bridge, T. W. 1896 A, p. 588.
Cope, E. D. 1892 N, p. 280, fig. 1.
Dana, J. D. 1896 A, p. 618, fig. 971.
Dean, B. 1895 A, p. 152, fig. 154.
Jaekel, O. 1892 A, p. 91.
1896 A, p. 8.
Traquair, R. H. 1890 A, p. 17.
1893 C, p. 266.
1893 D, p. 124.
Whiteaves, J. F. 1883 A, p. 354.
1883 B, p. 161.
1881 C, p. 31, text fig.
1889 A, p. 78, pl. v, fig. 5; pls. vi, vii; p. 91, pl. x, fig. 1.
Woodward, A. S. 1891 A, p. 362.
1898 B, p. 77, fig. 58.
Upper Devonian; Province of Quebec, Canada.

OSTEOLEPIDÆ.

Agassiz, L. 1843 B (1835), ii, p. 117. (Osteolepis.)
1844 B, p. 50. (Osteolepis.)
Collinge, W. E. 1893 A, p. 5.
Cope, E. D. 1889 R, p. 856.
Huxley, T. H. 1861 B. (Saurodipterini.)
Klaatsch, H. 1896 A, p. 318. ("Rhombodipterinen.")
Lütken, C. 1873 A, p. 33. (Rhombodipterini.)
McCoy, F. 1855 A, p. 585. (Saurodipteridæ.)
Nicholson and Lydekker 1889 A, p. 971. (Rhombodipterini.)
Pander, C. H. 1860 A. ("Saurodipterinen.")
Rohon, J. V. 1892 A, p. 29.
1899 B, p. 13. ("Osteolepiden.")
Steinmann and Döderlein 1890 A, p. 562. (Rhombodipteridæ.)
Traquair, R. H. 1891 A, p. 127.
1900 B, p. 517.
Woodward, A. S. 1891 A, p. 367.
1898 B, p. 77.
Zittel, K. A. 1890 A, p. 183. (Rhombodipterini.)

PARABATRACHUS Owen. Type *P. colei* Owen.

Owen, R. 1853 D, p. 67.
Unless otherwise indicated the following authorities use for this genus the name *Megalichthys*. Nevertheless, the name *Megalichthys* was originally based on materials belonging to a different genus and species. See p. 359.
Agassiz, L. 1843 B, ii, pt. ii, pp. 89, 154. (Not Megalichthys of 1836.)
Barkas, T. P. 1873 A, p. 35.
Cope, E. D. 1880 A, p. 52. (Ectosteorhachis.)
1883 H, p. 628. (Ectosteorhachis.)
1891 B, p. 457.
Gaudry, A. 1883 A, p. 234.
Hay, O. P. 1899 E, p. 788. (Parabatrachus.)
Huxley, T. H. 1861 B, p. 12.
1863 A, p. 67. (Parabatrachus.)
Klaatsch, H. 1890 A, p. 220.
McCoy, F. 1848 A, p. 3. (Centrodus, type *C. striatulus*, preoccupied.)
Miall, L. C. 1884 A.
Miller, S. A. 1889 A, p. 596. (Ectosteorachis.)
Newberry, J. S. 1873 A, pp. 256, 343.
1889 A, p. 215.
Nicholson and Lydekker 1889 A, pp. 970, 972.
Pictet, F. J. 1854 A, p. 179.
Quenstedt, F. A. 1852 A, p. 227.
1885 A, p. 348.
Roemer, F. 1865 A.
Traquair, R. H. 1881 B, p. 178.
1884 A.
Wellburn, E. D. 1900 A, p. 52.
Williamson, W. C. 1849 A, p. 456, pl. xlii, figs. 16–19.
Woodward, A. S. 1891 A, p. 378.
1892 B, p. 233.
Young, J. 1866 B.
Zittel, K. A. 1890 A. p. 184.

Parabatrachus ciceronius (Cope).

Cope, E. D. 1883 H, p. 628. (Ectosteorhachis.)
1883 P. (Ectosteorhachis.)
1888 BB, p. 286. (Ectosteorhachis.)
1891 B, p. 457. (Megalichthys.)
Hay, O. P. 1899 E, p. 788.
Wellburn, E. D. 1900 A, p. 60. (Megalichthys.)
Woodward, A. S. 1891 A, p. 388. (Megalichthys.)
Permian; Texas.

Parabatrachus macropomus (Cope).

Cope, E. D. 1892 L, p. 226, pl. viii. (Megalichthys.)
Cope, E. D. 1894 F, pl. xix, fig. 1. (Megalichthys.)
Hay, O. P. 1899 E, p. 788.
Carboniferous; Kansas.

Parabatrachus maxillaris (Agassiz).

This species is known in all scientific works as *Megalichthys hibberti*. The earliest specific name available is, however, *maxillaris*. Most of the authors here cited use the name *M. hibberti*.
Agassiz, L. 1843 B, ii, pt. ii, pp. 89–96, pls; lxiii, lxiii *a*, lxiv (M. hibberti); p. 96 (M. maxillaris).
Cope, E. D. 1880 A, p. 58.
Fleming, J., 1835, Edinb. New Phil. Jour., xix, p. 314, pl. iv, figs. 1–3. (Ichthyolithus clackmannensis.[1]
Hay, O. P. 1899 E, p. 788. (P. maxillaris.)
Miall, L. C. 1884 A, p. 347, figs. 1–4, 6.
Newberry, J. S. 1873 A, p. 343, pl. xl, fig. 3. ("Megalichthys.")
1889 A, p. 215.
Traquair, R. H. 1884 A.
Ward, J. 1890 A, p. 162, pl.
Wellburn, E. D. 1900 A, p. 52, pls. xiv–xvii, xix.
Whiteaves, J. F. 1881 D, p. 36. (Psammodus bretonensis.)
Williamson, W. C. 1849 A, p. 450, pl. xli, fig. 15; pl. xlii, figs. 16–19.
Woodward, A. S. 1891 A, pp. 378, 388.
Woodward and Sherborn 1890 A, p. 117.
Young, J. 1866 B.
Coal-measures; Great Britain, Cape Breton Island. Scales and bones not distinguishable as different have been found in Ohio and in Nova Scotia.

Parabatrachus nitidus (Cope).

Cope, E. D. 1880 A, p. 52. (Ectosteorhachis.)
1888 B B, p. 286. (E. nitidus.)
1891 B, p. 457, pl. xxxii, figs. 8, 9. (Megalichthys.)
1891 C. (Megalichthys.)
Hay, O. P. 1899 E, p. 788.
Woodward, A. S. 1891 A, p. 388. (Megalichthys.)
Permian; Texas.

GLYPTOPOMUS Agassiz. Type *G. minor* Agassiz.

Agassiz, L. 1844 B, p. 57.
Huxley, T. H. 1861 B, p. 4.
1866 A, p. 3.
Pictet, F. J. 1854 A, p. 193.
Woodward, A. S. 1891 A, p. 389.

Glyptopomus sayrei Newb.

Newberry, J. S. 1878 A, p. 189.
1889 A, p. 116, pl. xviii, fig. 1.
Woodward, A. S. 1891 A, p. 390.
Devonian (Catskill); Pennsylvania.

ONYCHODONTIDÆ.

Woodward, A. S. 1891 A, p. 391.
Rohon, J. V. 1899 A, p. 60.

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[1] *Ichthyolithus* was not regarded as a generic name.

ONYCHODUS Newb. Type *O. sigmoides* Newb.

Newberry, J. S. 1857 C, p. 124.
Claypole, E. W. 1896 B, p. 354.
Eastman, C. R. 1900 B, p. 36.
  1900 C, p. 392.
Jaekel, O. 1893 B, p. 175.
Miller, S. A. 1889 A, p. 602.
Newberry, J. S. 1857 A, p. 148.
  1862 A, p. 77, fig. 3.
  1870 B, p. 152.
  1873 A, pp. 256, 264, 265, 273, 296.
  1888 B, p. 118.
  1889 A, p. 53.
Newton, E. T. 1892 A.
Nicholson and Lydekker 1889 A, p. 968.
Rohon, J. V., 1899 A, p. 60.
Woodward, A. S. 1888 D.
  1889 B.
  1890 A, p. 391.
  1891 A, p. 392.
Zittel, K. A. 1890 A, p. 179.

Onychodus ortoni Newb.

Newberry, J. S. 1889 A, p. 71, pl. xix, figs. 1, 1*a*.
  1888 B, p. 118. (Insufficient description.)
Woodward, A. S. 1891 A, p. 393.
  Devonian (Huron shale); Ohio.

Onychodus sigmoides Newb.

Newberry, J. S. 1857 C, p. 124. (O. sigmoides, O. hopkinsi.)
Eastman, C. R. 1899 B. pp. 278, 287.
  1899 F, p. 321, figs. 2, 3.
Hitchcock, Fanny R, 1888 A.
Lesley, J. P. 1889 A, p. 497, figures.
  1892 A, pl. cl.
Miller, S. A. 1889 A, p. 603, figs. 1150, 1151.
Newberry, J. S. 1862 A, p. 77, fig. 3. (O. hopkinsi.)
  1873 A, pp. 265, 299, pl. xxvi, figs. 1-5; pl. xxvii, figs. 1, 2 (O. sigmoides); pp. 270, 302 (O. hopkinsi).
  1888 B, p. 118. (O. sigmoides, O. hopkinsi.)
  1889 A, p. 56, pl. xxxvi, figs. 1-4; pl. xxxvii, figs. 1-10 (O. sigmoides); p. 99 (O. hopkinsi).
Woodward, A. S. 1891 A, p. 329 (O. sigmoides); p. 393 (O. hopkinsi).
  Devonian (Corniferous); Ohio, New York: (Chemung); New York.
  O. sigmoides and O. hopkinsi are united on the authority of Dr. C. R. Eastman.

Onychodus sp. indet.

Whiteaves, J. F. 1892 A, p. 356. (No description.)
  Devonian; Manitoba.

Order ACTINISTIA Cope.

Cope, E. D. 1887 O, p. 1017.
  1889 R, p. 855.
  1891 B, p. 460.
  1891 E.
Cope, E. D. 1891 N, p. 19.
Woodward, A. S. 1891 A, p. 394.
  1898 B, p. 78.

CŒLACANTHIDÆ.

Agassiz, L. 1843 B, 18 ii, pt. ii, p. 168. ("Célacanthes.")
  1844 B, p. 59. ("Célacanthes.")
  1846 A, p. 45. ("Célacanthes.")
Cope, E. D. 1877 N, p. 56.
  1878 A, p. 293.
  1889 R, p. 855.
Dollo, L. 1896 A.
Gegenbaur, C. 1895 B.
Günther, A. 1872 A, p. 559.
  1880 A, p. 365.
  1881 A, p. 687.
Haeckel, E. 1895 A, p. 136. (Cœlacanthini.)
Huxley, T. H. 1861 B, p. 15. (Cœlacanthini.)
  1866 A. (Cœlacanthini.)
Huxley, T. H. 1872 A, p. 128. (Cœlacanthini.)
King, W. 1850 A, p. 235.
McCoy, F. 1855 A, p. 589. (Cœlacanthi.)
Newberry, J. S. 1873 A, p. 255.
Nicholson and Lydekker 1889 A, p. 972.
Owen, R. 1860 E, p. 131. (Cœlacanthi.)
Pictet, F. J. 1854 A, p. 141. ("Célacanthes.")
Reis, O. M. 1888 A.
Steinmann and Döderlein 1890 A, p. 562.
Vetter, B. 1881 A, p. 9. (Cœlacanthini.)
Willemoes-Suhm, R. 1869 A.
Woodward, A. S. 1891 A, p. 394.
  1892 E.
  1898 B, p. 78.
Zittel, K. A. 1890 A, p. 171. (Cœlacanthini.)

CŒLACANTHUS Agassiz. Type *C. granulatus* Agassiz.

Agassiz, L. 1843 B, Feuill (1836), p. 83; ii (1843), pt. ii, p. 170.
  1843 B, ii, pt. ii, p. 178. (Hoplopygus.)
  1844 A.
Cope, E. D. 1873 O, p. 341. (Conchiopsis, with *C. filiferus* as type = Cœlacanthus elegans.)
Heckel, J. J. 1850 A, p. 362.
Huxley, T. H. 1861 B, p. 16.
  1866 A, p. 8.
Miller, S. A. 1889 A, p. 592.
Newberry, J. S. 1868 A, p. 144.
  1873 A, pp. 285, 337.
  1873 B. (On Conchiopsis.)
  1874 E, p. 76. (On Conchiopsis.)
Nicholson and Lydekker 1889 A, p. 973.
Pictet, F. J. 1854 A, p. 141.
Reis, O. M. 1888 A, p. 71. (Rhabdoderma.)
Vetter, B. 1881 A, p. 9.

Ward, J. 1890 A, p. 168.
Winckler, T. C. 1871 A.
Woodward, A. S. 1891 A, p. 399.
Woodward and Sherborn 1890 A, p. 39.
Zittel, K. A. 1890 A, p. 171.

Cœlacanthus elegans Newb.

Newberry, J. S. 1856 B, p. 98.
Cope, E. D. 1873 O, p. 342. (Conchiopsis filiferus, C. anguliferus.)
1873 Q, p. 418.
Dean, B. 1895 A, p. 153, fig. 155.
Hancock and Atthey 1872, p. 256, pl. xvii, fig. 4. (C. lepturus.)
Hay, O. P. 1900 A, p. 116.
Huxley, T. H. 1866 A, pp. 14, 20, pl. v, figs. 1, 2, 4 (C. elegans); p. 16, pl. ii, figs. 1-4; pl. iii, figs. 1-3; pl. iv, figs. 1-6 (C. lepturus).
Miller, S. A. 1889 A, p. 592, fig. 1112.
Newberry, J. S. 1873 A, p. 339, pl. xl, figs. 1-1*d*.
1873 B.
1873 D, p. 30.
1874 E, p. 76.
Newberry, J. S. 1889 A, p. 213.
Woodward, A. S. 1891 A, p. 403.
Coal-measures; Ohio.

Cœlacanthus ornatus Newb.

Newberry, J. S. 1856 B, p. 98.
Huxley, T. H. 1866 A, p. 14.
Newberry, J. S. 1873 A, p. 340.
1889 A, p. 227.
Reis, O. M. 1888 A, p. 5. (Rhabdoderma.)
Woodward, A. S. 1891 A, p. 406.
Coal-measures; Ohio.

Cœlacanthus robustus Newb.

Newberry, J. S. 1856 B, p. 98.
Hay, O. P. 1900 A, p. 115.
Huxley, T. H. 1866 A, p. 14.
Newberry, J. S. 1873 A, p. 341, pl. xl, figs. 2, 2*a*.
1889 A, p. 228.
Reis, O. M. 1888 A, pp. 5, 71. (Rhabdoderma.)
Woodward, A. S. 1891 A, p. 406.
Coal-measures; Ohio, Illinois.

PEPLORHINA Cope. Type *P. anthracina* Cope.

Cope, E. D. 1873 O, p. 343.
1873 Q, p. 418.
1875 D, p. 409.
Newberry, J. S. 1874 E, p. 76.
Nicholson and Lydekker 1889 A, p. 969.
Woodward, A. S. 1891 A, p. 408.

Peplorhina anthracina Cope.

Cope, E. D. 1873 O, p. 343.
1873 Q, p. 418.
1875 D, p. 410, pl. xxxv, fig. 6; pl. xli, figs. 4-6.
Lesley, J. P. 1889 A, p. 622, figures.
Newberry, J. S. 1873 B.
1874 E, p. 76.
Woodward, A. S. 1891 A, p. 408.
Coal-measures; Ohio.

Peplorhina arctata Cope.

Cope, E. D. 1877 N, p. 54.
Case, E. C. 1900 A, p. 707.
Cope, E. D. 1882 B, p. 461. ("Theromorphous saurian.")
Woodward, A. S. 1891 A, p. 408.
Permian; Illinois.

Peplorhina exanthematica Cope.

Cope, E. D. 1873 O, p. 342. (Conchiopsis.)
1873 Q, p. 418.
Newberry, J. S. 1873 B. (Syn. of P. anthracina.)
1874 E, p. 76. (Syn. of P. anthracina.)
Woodward, A. S. 1891 A, p. 408.
Coal-measures; Ohio.

DIPLURUS Newb. Type *D. longicaudatus* Newb.

Newberry, J. S. 1878 B.
Dean, B. 1893 D.
1895 A, p. 153.
Newberry, J. S. 1888 A, p. 70.
Nicholson and Lydekker 1889 A, p. 973.
Woodward, A. S. 1891 A, p. 409.
Zittel, K. A. 1890 A, p. 174.

Diplurus longicaudatus Newb.

Newberry, J. S. 1878 B.
Bridge, T. W. 1896 A, p. 588.
Dean, B. 1893 B.
1895 A, p. 154, fig. 156.
Newberry, J. S. 1888 A, p. 74, pl. xx, figs. 1-5.
Woodward, A. S. 1891 A, p. 409.
Triassic; New Jersey, Connecticut.

Superorder ACTINOPTERI Cope.

Cope, E. D. 1872 C, p. 325.
1877 N, p. 56.
1877 O, p. 41.
1878 A, p. 293.
1887 G, p. 1017. (Actinopterygia.)
1889 R, p. 855. (Actinopterygia.)
1891 B, p. 459. (Actinopterygia.)
1891 N, pp. 19, 21. (Actinopterygia.)
Cope, E. D. 1898 B, pp. 30, 33. (Actinopterygia.)
Gadow, H. 1898 A, p. 7. (Actinopterygia.)
Hay, O. P. 1899 F, p. 682.
Reis, O. M. 1897 A, p. 130. ("Actinopterygier.")
Woodward, A. S. 1891 A, p. 423.
1895 A.
1898 B, p. 81. (Actinopterygia.)

Order CHONDROSTEI Müller.

Müller, J. 1846 C.
Agassiz, L. 1843 B (1833), ii, pt. i, pp. 1, 2, 3, 10. ("Lepidoides," in part; "Sauroides," in part.)
Beard, J. 1890 A, p. 182.
Bridge, W. J. 1879 A.
Cope, E. D. 1880 P. (Lysopteri.)
1872 C, p. 327.
1877 N, p. 57.
1877 O, p. 41.
1878 A, p. 293.
1887 O, p. 1017. (Podopterygia, in part.)
1889 R, pp. 855, 856 (Podopterygia, in part); p. 857 (Lysopteri).
1891 B, p. 459 (Podopterygia, in part); p. 460 (Lysopteri).
1891 E. (Podopterygia, in part; Lysopteri.)
1891 N, pp. 19, 20. (Podopterygia.)
1896 B, pp. 30, 32. (Podopterygia.)
Egerton, P. G. 1859 B.
Gadow, H. 1896 A, p. 8.
Gegenbaur, C. 1896 A.
Gill, T. 1872 C, p. 22. (Chondroganoidei.)
1893 A, p. 130.
Goette, A. 1878 A, p. 442.
Günther, A. 1870 A, p. 332.
1880 A, p. 360.
1881 A, p. 687.
Haeckel, E. 1895 A, p. 249.
Huxley, T. H. 1872 A, p. 128.
Jordan and Evermann 1896 A, p. 102.
Klaatsch, H. 1890 A, p. 146.
Ryder, J. A. 1886 A.
Stannius, H. 1854 A.
Thacher, J. K. 1877 A.
1877 B.
Traquair, R. H. 1879 A, p. 380. (Acipenseroidei.)
1877 B.
1887 A.
Woodward, A. S. 1889 H, p. 43.
1891 A, pp. v, 423.
1895 A, p. v.
1898 B, p. 82.
Zittel, K. A. 1890 A, p. 163 (Chondrostei); p. 186 (Heterocerci).
Zograf, N. 1896 A.

PALÆONISCIDÆ.

Bridge, W. J. 1879 A, p. 723.
Cope, E. D. 1889 R, p. 858.
1891 E.
Fritsch, A. 1895 A, pp. 83, 122.
Günther, A. 1880 A, p. 369.
1881 A, p. 687.
Kosmak, G. W. 1895 A, p. 20.
Nicholson and Lydekker 1889 A, p. 976.
Owen, R. 1860 E, p. 136.
Steinmann and Döderlein 1890 A, p. 565.
Traquair, R. H. 1877 B.
1891 A, p. 128.
Vogt, C. 1852, Zool. Briefe., ii. (Palæoniscida.)
Woodward, A. S. 1889 H, p. 43.
1891 A, p. 425.
1893 E, p. 450.
1895 A, p. vi.
1898 B, p. 82.
Zittel, K. A. 1890 A, p. 188.

Gonatodus Traquair. Type *G. punctatus* (Agassiz).

Traquair, R. H. 1877 A, p. 555.
1890 F, p. 399. (Gonatodus, Drydenius?)
Ward, J. 1890 A, p. 178.
Woodward, A. S. 1891 A, p. 434.

Gonatodus brainerdi (Thomas).

Thomas, W. H. B. 1853, Cleveland Times, Sept. 14, as Palæoniscum brainerdi (*fide* J. S. Newberry).
Brainerd, —— 1852 A, p. 18, figs. 1-3. ("Palæoniscus.")
Hitchcock, C. H. 1868 B, p. 187. (Palæoniscus; no description.)
Lesley, J. P. 1889 A, p. 584, figure. (Palæoniscus.)
Newberry, J. S. 1862 A, p. 78. (Palæoniscus.)
1868 A, p. 145. (Palæoniscus.)
1873 A, pp. 281, 346. (Palæoniscus.)
1889 A, p. 125, pl. xxxiv, figs. 1, 2. (Gonatodus.)
Woodward, A. S. 1891 A, p. 436.
Devonian (Berea grit); Ohio.

Amblypterus Agassiz. Type *A. latus* Agassiz.

Agassiz, L. 1843 B (1833), ii, pp. 3, 28.
1844 A.
Eichwald, E. 1860 A, p. 1587.
Fritsch, A. 1895 A, p. 94.
Martin, K. 1873 A, p. 720.
Miller, S. A. 1889 A, p. 587.
Pictet, F. J. 1854 A, p. 181.
Quenstedt, F. A. 1852 A, p. 225.
1885 A, p. 345.
Steinmann and Döderlein 1890 A, p. 566.
Traquair, R. H. 1867 A.
1877 A.
Traquair, R. H. 1877 B.
Woodward, A. S. 1891 A, p. 437.
Zittel, K. A. 1890 A, pp. 189, 192.

Amblypterus carolinæ nom. nov.

Cope, E. D. 1875 V, p. 30. (A. ornatus.)
Emmons, E. 1857 A, p. 44, fig. 16. (A. ornatus, not of Giebel.)
1860 A, p. 183, fig. 161^{1-3}. (A. ornatus.)
Woodward, A. S. 1891 A, p. 448. (A. ornatus.)
Triassic; North Carolina.

HAPLOLEPIS S. A. Miller. Type *E. corrugata* (Newb.).

Miller, S. A. 1892 A, p. 715.
Hay, O. P. 1899 E, p. 791.
Miller, S. A. 1889 A, p. 597 (Eurylepis); p. 602 (Mecolepis).
Newberry, J. S. 1856 B, p. 96. (Mecolepis, preoccupied.)
1857 B, p. 150. (Eurylepis, preoccupied.)
1857 B. (Eurylepis.)
1868 A, p. 144. (Eurylepis.)
1873 A, p. 347. (Eurylepis.)
1889 A, p. 212. (Eurylepis.)
Traquair, R. H. 1894 B, p. 373. (Eurylepis.)
Woodward, A. S. 1891 A, p. 448. (Eurylepis.)
Zittel, K. A. 1891 A, p. 192. (Eurylepis.)

Haplolepis corrugata (Newb.).

Newberry, J. S. 1856 B, p. 96. (Mecolepis.)
Miller, S. A. 1892 A, p. 715.
Newberry, J. S. 1857 B. (Eurylepis.)
1873 A, pp. 138, 350, pl. xxxviii, figs. 4, 4*a*. (Eurylepis.)
Woodward, A. S. 1891 A, p. 450. (Eurylepis.)
Coal-measures; Ohio.

Haplolepis granulata (Newb.).

Newberry, J. S. 1856 B, p. 97. (Mecolepis granulatus, M. insculptus.)
Miller, S. A. 1892 A, p. 715.
Newberry, J. S. 1857 B, p. 150. (Eurylepis granulatus, E. insculptus.)
1873 A, p. 352, pl. xxxix, figs. 2–2*a*, (Eurylepis insculpta.); figs. 5–5*a* (Eurylepis granulata).
Woodward, A. S. 1891 A, p. 449.
Coal-measures; Ohio.

Haplolepis minima (Newb.).

Newberry, J. S. 1873 A, p. 353, pl. xxxix, fig. 3. (Eurylepis.)
Miller, S. A. 1892 A, p. 715.
Woodward, A. S. 1891 A, p. 450. (Eurylepis.)
Coal-measures; Ohio.

Haplolepis ornatissima (Newb.).

Newberry, J. S. 1856 B, p. 97. (Mecolepis.)
Miller, S. A. 1892 A, p. 715.
Newberry, J. S. 1857 B, p. 150. (Eurylepis.)
1873 A, p. 352, pl. xxxix, figs. 4, 4*a*. (Eurylepis.)
Woodward, A. S. 1891 A, p. 450. (Eurylepis.)
Coal-measures; Ohio.

Haplolepis ovoidea (Newb.).

Newberry, J. S. 1856 B, p. 97. (Mecolepis.)
Miller, S. A. 1892 A, p. 715.
Newberry, J. S. 1857 B, p. 150. (Eurylepis.)
1873 A, p. 351, pl. xxxix, fig. 1. (Eurylepis.)
Woodward, A. S. 1891 A, p. 450. (Eurylepis.)
Coal-measures; Ohio.

Haplolepis serrata (Newb.).

Newberry, J. S. 1856 B, p. 97. (Mecolepis.)
Miller, S. A. 1892 A, p. 715.
Newberry, J. S. 1857 B, p. 150. (Eurylepis.)
Woodward, A. S. 1891 A, p. 450. (Eurylepis.)
Coal-measures; Ohio.

Haplolepis striolata (Newb.).

Newberry, J. S. 1873 A, p. 355. (Eurylepis).
Miller, S. A. 1892 A, p. 715.
Woodward, A. S. 1891 A, p. 450. (Eurylepis.)
Coal-measures; Ohio.

Haplolepis tuberculata (Newb.).

Newberry, J. S. 1856 B, p. 96. (Mecolepis.)
Miller, S. A. 1889 A, p. 597, fig. 1130. (Eurylepis.)
1892 A, p. 715.
Newberry, J. S. 1857 B, p. 150. (Eurylepis.)
1873 A, p. 350, pl. xxxviii, figs. 2–3*a*. (Eurylepis.)
Woodward, A. S. 1891 A, p. 449. (Eurylepis.)
Coal-measures; Ohio.

CHEIROLEPIS Agassiz. Type C. *traillii* Agassiz.

Agassiz, L. 1843 B (1835), pt. ii, p. 128.
1844 B, p. 44.
Eichwald, E. 1860 A, p. 1573.
Huxley, T. H. 1861 B, p. 39.
McCoy, F. 1855 A, p. 580. (Chirolepis.)
Miller, S. A. 1889 A, p. 589. (Chirolepis.)
Nicholson and Lydekker 1889 A, p. 977.
Pander, C. H. 1860 A, p. 69.
Pictet, F. J. 1854 A, p. 190.
Powrie, J. 1867 A.
Reis, O. M. 1896 A, p. 187.
Traquair 1875 A.
1888 B, p. 516.
Woodward, A. S. 1891 A, p. 451.
Woodward and Sherborn 1890 A, p. 31.
Zittel, K. A. 1890 A, p. 188.

Cheirolepis canadensis Whiteaves.

Whiteaves, J. F. 1881 C, p. 33.
Cope, E. D. 1881 L, p. 253. (C. cummingsæ?)
Dana, J. D. 1896 A, p. 618, fig. 974.
Traquair, R. H. 1890 A, p. 20.
Whiteaves, J. F. 1881 A, p. 496.
1883 A, p. 355.
1883 D, p. 33.
1889 A, p. 90.
Woodward, A. S. 1891 A, p. 457.
Upper Devonian; Province of Quebec.

RHADINICHTHYS Traquair. Type *R. ornatissimus* Agassiz.

Traquair, R. H. 1877 A, p. 558.
Collinge, W. E. 1898 A, p. 7.
Traquair, R. H. 1881 A, p. 25.
Ward, J. 1890 A, p. 175.
Wellburn, E. D. 1900 B, p. 260.
Woodward, A. S. 1891 A, p. 461.
Zittel, K. A. 1890 A, p. 193.

Rhadinichthys alberti (Jackson).

Jackson, C. T. 1851 B, p. 22, pl. i, fig. 1. (Palæoniscus.)
Dawson, J. W. 1868 A, p. 231, fig. 62. (Palæoniscus alberti?)
1877 A, p. 338.
1878 A, supplement, p. 100. (Palæoniscus.)
Egerton, P. G. 1853 A. (Palæoniscus.)
Jackson, C. T. 1851 A, p. 138. (Palæoniscus.)
Lesley, J. P. 1889 A, p. 584, figure. (Palæoniscus.)
Miller, S. A. 1889 A, p. 611, fig. 1172.
Newberry, J. S. 1889 A, p. 187. (Palæoniscus.)
Traquair, R. H. 1877 A, p. 559.
Woodward, A. S. 1891 A, p. 465.
Subcarboniferous; New Brunswick.

Rhadinichthys cairnsii (Jackson).

Jackson, C. T. 1851 B, p. 23, pl. i, fig. 3. (Palæoniscus.)
Dawson, J. W. 1877 A, p. 339.
1878 A, supplement, p. 100. (Palæoniscus.)
Egerton, P. G. 1853 A. (Palæoniscus.)
Jackson, C. T. 1851 A, p. 139. (Palæoniscus.)
Newberry, J. S. 1889 A, p. 187. (Palæoniscus.)
Woodward, A. S. 1891 A, p. 465.
Subcarboniferous; New Brunswick.

Rhadinichthys gracilis (Newb. and Worth).

Newberry and Worthen 1870 A, p. 347, pl. iii, fig. 4. (Palæoniscus.)
Woodward, A. S. 1891 A, p. 469.
Coal-measures; Illinois.

Rhadinichthys leidyianus (Lea).

Lea, I. 1853 B, p. 206, pl. xx, figs. 4, 5. (Palæoniscus.)
Amer. Jour. Science 1852 B.
Woodward, A. S. 1891 A, p. 469.
Coal-measures; Pennsylvania.

Rhadinichthys? lineatus (Newb.).

Newberry, J. S. 1856 B, p. 97. (Mecolepis.)
1857 B. (Eurylepis.)
1873 A, p. 353, pl. xxxix, figs. 7, 7*a*. (Eurylepis.)
1889 A, p. 228. (Rhadinichthys?.)
Woodward, A. S. 1891 A, p. 450. (Eurylepis?.)
Coal-measures; Ohio.

Rhadinichthys modulus (Dawson).

Dawson, J. W. 1877 A, p. 337, fig. 1. [Palæoniscus (Rhadinichthys).]
1878 A, supplement, p. 99, fig. 18. [P. (Rhadinichthys).]
Newberry, J. S. 1889 A, p. 187. (Palæoniscus.)
Woodward, A. S. 1891 A, p. 466.
Subcarboniferous; New Brunswick.

PYGOPTERUS Agassiz. Type *P. humboldti* Agassiz.

Agassiz, L. 1843 B (1833), ii, pt. i, p. 10; ii, pt. ii, pp. 74, 152 (1844).
1844 A.
Barkas, W. J. 1878 C, pp. 205, 207.
McCoy, F. 1855 A, p. 608.
Martin, K. 1873 A, p. 722.
Miller, S. A. 1889 A, p. 611.
Pictet, F. J. 1854 A, p. 179.
Quenstedt, F. A. 1852 A, p. 226.
1885 A, p. 347.
Traquair, R. H. 1867 A.
1875 B.
1877 A.
Woodward, A. S. 1891 A, p. 470.
Zittel, K. A. 1890 A, p. 194.

Pygopterus humboldti[1] Agassiz.

Agassiz, I. 1843 B, ii, pt. i (1833), p. 10 (P. humboldti); pt. ii (1844), p. 74, pls. liv, lv (P. humboldti); p. 76, pls. liii, liii*a* (P. mandibularis).
Lea, I. 1856 C, p. 78. (P. mandibularis.)
Miller, S. A. 1889 A, p. 611, fig. 1171. (P. mandibularis.)
Wheatley, C. M. 1861 A, p. 44. (P. mandibularis.)
Woodward, A. S. 1891 A, p. 470.
Permian; Europe: Triassic; Pennsylvania?.

PALÆONISCUM Blainv. Type *P. freieslebeni* Blainv.

Blainville, H. M. D., 1818, Nouv. Dict. d' Hist. Nat., vol. xxvii, p. 320.

The following authorities, unless otherwise indicated, call this genus *Palæoniscus*. The original form was *Palæoniscum*.

Agassiz, L. 1843 (1833) B, ii, pt. i, pp. 4, 41.
1844 A.
1851 B.
Barkas, W. J. 1878 C, p. 207.
Egerton, P. G. 1849 B, p. 4.
Eichwald, E. 1860 A, p. 1581.
Hancock and Atthey 1868 A, p. 358, pl. xv, figs. 3-5; pl. xvi, figs. 1, 2.
Koninck, L. G. de 1844 A, p. 608. (Palæoniscum.)
Kosmak, G. W. 1895 A, p. 20.
McCoy, F. 1855 A, p. 605.
Martin, K. 1873 A, p. 700, pl. xxii.
Miller, S. A. 1889 A. p. 604.

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[1] This species, under the name *P. mandibularis*, was reported with doubt by Lea from the Triassic of Pennsylvania. The scales there found probably belong to some other species.

Newberry, J. S. 1873 A, p. 344.
Nicholson and Lydekker 1889 A, p. 977.
Owen, R. 1845 B, p. 69.
Pictet, F. J. 1854 A, p. 184.
Quenstedt, F. A. 1852 A, p. 223.
1885 A, p. 343.
Redfield, W. C. 1841 A, p. 25.
1856 A, p. 36.
Rohon, J. V. 1889 A, p. 10.
Steinmann and Döderlein 1890 A, p. 566.
Traquair, R. H. 1877 A
Williamson, W. C. 1849 A, p. 445, pl. xl, fig. 7; pl. xli, fig. 1.
Woodward, A. S. 1891 A, p. 476.
Zittel, K. A. 1890 A, p. 190.

Palæoniscum antiquum Williams.

Williams, H. U. 1886 A, p. 84, fig. 2.
Woodward, A. S. 1891 A, p. 485.
Devonian (Portage); New York.

Palæoniscum devonicum Clarke.

Clarke, J. M. 1885 A, pp. 20, 41, pl. i, figs. 2-6.
Lesley, J. P. 1889 A, p. 585, figures.
Woodward, A. S. 1891 A, p. 485.
Devonian (Genesee); New York.

Palæoniscum reticulatum Williams.

Williams, H. U. 1886 A, p. 86, fig. 1.
Woodward, A. S. 1891 A, p. 485.
Devonian (Portage); New York.

Palæoniscum scutigerum Newb.

Newberry, J. S. 1868 A, p. 145. (No description.)
Hitchcock, C. H. 1868 B, p. 186. (No description.)
Coal-measures; Ohio.

TEGEOLEPIS S. A. Miller. Type *Actinophorus clarkii* Newb.

Miller, S. A. 1892 A, p. 717.
Claypole, E. W. 1895 F. (Actinophorus.)
Hay, O. P. 1899 E, p. 791.
Newberry, J. S. 1888 D, p. 179. (Actinophorus, type *A. clarkii*; preoccupied.)
1889 A, p. 174. (Actinophorus.)
Woodward, A. S. 1891 A, p. 486. (Actinophorus.)

Tegeolepis clarkii (Newb.).

Newberry, J. S. 1888 D, p. 179. (Actinophorus.)
Claypole, E. W. 1895 F. (Actinophorus.)
Newberry, J. S. 1889 A, p. 175, pl. xlix, fig. 1. (Actinophorus.)
Woodward, A. S. 1891 A, p. 487. (Actinophorus.)
Devonian (Cleveland shale); Ohio.

ELONICHTHYS Giebel. Type *E. germari* Giebel.

Giebel, C. G. 1848 A, p. 249.
Traquair, R. H. 1877 A, p. 553. (Cosmoptychius.)
1877 B, p. 42 (Cosmoptychius); p. 47 (Elonichthys).
Ward, J. 1890 A, p. 171.
Woodward, A. S. 1891 A, p. 487.
Woodward and Sherborn 1890 A, p. 48 (Cosmoptychius); p. 73 (Elonichthys).
Zittel, K. A. 1890 A, p. 190.

Elonichthys browni (Jackson).

Jackson, C. T. 1851 B, p. 22, pl. i, fig. 2. (Palæoniscus.)
Dawson, J. W. 1877 A, p. 339. [Palæoniscus (Elonichthys) brownii.]
1878 A, supplement p. 101. [Palæoniscus (Elonichthys) brownii.]
Jackson, C. T. 1851 A. p. 139. (Palæoniscus.)
Newberry, J. S. 1889 A, p. 187.
Traquair, R. H. 1877 A, p. 553. (Elonichthys.)
Woodward, A. S. 1891 A, p. 501.
Subcarboniferous; New Brunswick.

Elonichthys elegans (Emmons).

Emmons, E. 1860 A, p. 191, fig. 167^{1-2}. (Rabdiolepis.)
Leidy, J. 1876 B. (Rhabdolepis elegans?)
1876 D. (Rabdiolepis elegans?)
Mesozoic; N. Carolina, Pennsylvania.

Elonichthys hypsilepis Hay.

Hay, O. P. 1900 A, p. 117 (E. peltigerus?); p. 120 (E. hypsilepis); pl. vii (E. peltigerus hypsilepis).
Coal-measures; Illinois.

Elonichthys macropterus (Agassiz).

Agassiz, L. 1843 B (1833), ii, pt. i, pp. 4, 31; pl. i, figs. 4-7; pl. iii, figs. 1-4. (Amblypterus.)
Goldfuss, A. 1847 A, p. 20, pl. v, figs. 1-8. (Amblypterus.)
Hay, O. P. 1900 A, p. 120. (Syn.? of E. hypsilepis.)
? Newberry and Worthen 1870 A, p. 348. (Amblypterus.)
Traquair, R. H. 1877 A, p. 552.
1877 B, pl. ii, fig. 6. (Rhabdolepis.)
Woodward, A. S. 1891 A, p. 491.
Coal-measures; Europe, Illinois?

Elonichthys peltigerus Newb.

Newberry, J. S. 1856 B, p. 98.
Hay, O. P. 1900 A, p. 117.
Lesley, J. P. 1889 A, p. 585, figure. (Palæoniscus.)
1895 A, pl. dlxx. (Palæoniscus.)
Miller, S. A. 1889 A, p. 605, fig. 1155. (Palæoniscus.)
Newberry, J. S. 1873 A, p. 345, pl. xxxviii, figs. 1-1b.
Newberry and Worthen 1866 A, p. 17, fig. 1. (Palæoniscus.)
Traquair, R. H. 1877 A, p. 553.
1877 B, p. 47.
Woodward, A. S. 1891 A, p. 489.
Coal-measures; Ohio, Illinois, Indiana.

ACROLEPIS Agassiz. Type *A. sedgwicki* Agassiz.

Agassiz, L. 1843 B, ii, pt. i, p. 11 (1833); ii, pt. ii, p. 79 (1844).
1844 A.
Barkas, W. J. 1878 C, p. 207.
Eichwald, E. 1860 A, p. 1577.
Fritsch, A. 1895 A, p. 115.
McCoy, F. 1855 A, p. 609.
Martin, K. 1873 A, p. 717.
Miller, S. A. 1889 A, p. 587.
Pictet, F. J. 1854 A, p. 180.
Quenstedt, F. A. 1852 A, p. 226.
1885 A, p. 346.
Woodward, A. S. 1891 A, p. 501.
Zittel, K. A. 1890 A, p. 191.

Acrolepis ? hortonensis Dawson.

Dawson, J. W. 1868 A, p. 254, fig. 77 *e, f.*
1877 A, p. 339. (Palæoniscus jacksoni.)
1878 A, p. 255, fig. 77 *e, f.* (A. ? hortonensis); supplement, p. 101 (Palæoniscus jacksoni).
Newberry, J. S. 1889 A, p. 187.
Woodward, A. S. 1891 A, p. 508.
Subcarboniferous; New Brunswick.

PLATYSOMIDÆ.

Young, J. 1866 A, p. 316.
Bridge, W. J. 1879 A, p. 723.
Cope, E. D. 1880 P.
1891 E.
Günther, A. 1880 A, p. 370.
1881 A, p. 687.
Nicholson and Lydekker 1889 A, p. 979.
Steinmann and Döderlein 1890 A, p 567.
Traquair, R. H. 1879 A.
1891 A, p. 129.
1896 A, p. 125.
Woodward, A. S. 1891 A, p. 527. (Platysomatidæ.)
1898 B, p. 87.
Zittel, K. A. 1890 A, p. 197.

CHIRODUS McCoy. Type *C. pes-ranæ* McCoy.

McCoy, F. 1848 A, p. 130.
Davis, J. W., 1884, Quart. Jour. Geol. Soc., xl, p. 620. (Hemicladodus.)
Miller, S. A. 1889 A, p. 589.
Pictet, F. J. 1854 A, p. 268.
Rohon, J. V. 1898 A.
Traquair, R. H. 1878 A, p. 15. (Cheirodus.)
Ward, J. 1890 A, p. 183.
Woodward, A. S. 1891 A, p. 535. (Cheirodus.)
Woodward and Sherborn 1890 A, p. 30. (Cheirodus.)
Young, J. 1866 A, p. 306. (Amphicentrum.)
Zittel, K. A. 1890 A, p. 199. (Cheirodus.)

Chirodus acutus Newb.

Newberry, J. S. 1856 B, p. 99. (Cheirodus.)
Miller, S. A. 1889 A, p. 589.
Woodward, A. S. 1891 A, p. 540. (Cheirodus.)
Coal-measures; Ohio.

PLATYSOMUS Agassiz. Type *P. gibbosus* Agassiz.

Agassiz, L. 1843 B (1835), ii, pt. i, pp. 6, 161.
1844 A.
Collinge, W. E. 1893 A, p. 9.
Egerton, P. G. 1849 A.
Heckel, J. J. 1850 A, p. 365.
King, W. 1850 A, p. 228.
Koninck, L. G. de 1878 A, p. 24.
McCoy, F. 1855 A, p. 614.
Miller, S. A. 1889 A, p. 607.
Newberry, J. S. 1873 A, p. 258.
Nicholson and Lydekker 1889 A, p. 980.
Quenstedt, F. A. 1852 A, p. 227.
1885 A, p. 347.
Pictet, F. J. 1854 A, p. 208.
Steinmann and Döderlein 1890 A, p. 567.
Traquair, R. H. 1879 A.
Woodward, A. S. 1891 A, p. 541.
Young, J. 1866 A, p. 302.
Zittel, K. A. 1890 A, p. 200.

Platysomus circularis Newb. and Worth.

Newberry and Worthen 1870 A, p. 347, pl. iv, fig. 2.
Woodward, A. S. 1891 A, p. 550.
Coal-measures; Illinois.

Platysomus lacovianus Cope.

Cope, E. D. 1891 B, p. 462, pl. xxxi, fig. 11.
Coal-measures; Illinois.

Platysomus orbicularis Newb. and Worth.

Newberry and Worthen 1870 A, pl. iii, fig. 1. (No description.)
Woodward, A. S. 1891 A, p. 550.
Coal-measures; Illinois.

Platysomus palmaris Cope.

Cope, E. D. 1891 B, p. 460, pl. xxxiii, fig. 10.
Permian; Indian Territory.

TURSEODUS Leidy. Type *T. acutus* Leidy.

Leidy, J. 1857 F, p. 167.

Turseodus acutus Leidy.

Leidy, J. 1857 F, p. 167.
Wheatley, C. M. 1861 A, p. 44.
Woodward, A. S. 1891 A, p. 527.
Triassic?; Pennsylvania.

DICTYOPYGIDÆ.

Hay, O. P. 1899 E, p. 789.
Woodward, A. S. 1890 C, p. 1. (Catopteridæ.)
1890 D, p. 15. (Catopteridæ.)
1895 A, pp. vii, 1. (Catopteridæ.)
1898 B, p. 87. (Catopteridæ.)
Zittel, K. A. 1890 A, p. 202. (Stylodontidæ, in part.)

REDFIELDIUS Hay. Type *Catopterus gracilis* Redfield.

Hay, O. P. 1899 E, p. 789.

The following authors refer to this genus as *Catopterus*. This name is, however, preoccupied through Agassiz's use of it for what is now called *Dipterus*.

Egerton, P. G. 1849 B, p. 8.
1853 B, p. 277.
Newberry, J. S. 1888 A, p. 50.
Nicholson and Lydekker 1889 A, p. 983.
Pictet, F. J. 1854 A, p. 187.
Redfield, J. H. 1837 A, p. 39. (Catopterus, type *C. gracilis*; not Catopterus of Agassiz, 1833.)
Redfield, W. C. 1841 A, p. 26.
1856 A.
1857 A.
Traquair, R. H. 1877 A, p. 562.
Woodward, A. S. 1890 D, p. 15.
1895 A, pp. vii, 1.
1898 B, p. 88.
Zittel, K. A. 1890 A, p. 203.

Redfieldius anguilliformis (W. C. Redfield).

Redfield, W. C. 1841 A, p. 27. (Catopterus.)
De Kay, J. E. 1842 B, p. 386. (Catopterus.)
Egerton, P. G. 1849 B, p. 10. (Catopterus.)
Hay, O. P. 1899 E, p. 789. (Redfieldius.)
Newberry, J. H. 1888 A, p. 59, pl. xviii, fig. 5. (Catopterus).
Woodward, A. S. 1895 A, p. 3. (Catopterus.)
Triassic; Connecticut, New Jersey.

Redfieldius gracilis (J. H. Redfield).

Redfield, J. H. 1837 A, p. 39, pl. 1. (Catopterus.)

The following authors, unless otherwise noted, put this species in *Catopterus* Redfield.

"D. L. H." 1838 A, p. 199.
Dana, J. D. 1896 A, p. 751, fig. 1170.
Davis, C. H. S. 1887 A.
De Kay, J. E. 1842 B, p. 386.
Egerton, P. G. 1849 B, p. 10.
Hay, O. P. 1899 E, p. 789. (Redfieldius.)
Hills, R. C. 1880 A.
Hitchcock, E. 1841 A, pp. 440, 460.
Newberry, J. S. 1888 A, p. 55, pl. xvi, figs. 1-3.
Redfield, W. C. 1838 B.
1839 A.
1841 A, p. 27.
1857 A.
Wheatley, C. M. 1861 A, p. 44.
Woodward, A. S. 1895 A, p. 2.
Triassic; Connecticut, Massachusetts, New Jersey.

Redfieldius minor (Newb.).

Newberry J. S. 1888 A, p. 57, pl. xvii, figs. 1-4. (Catopterus.)
Hay, O. P. 1899 E, p. 789.
Woodward, A. S. 1895 A, p. 3. (Catopterus.)
Triassic; Connecticut.

Redfieldius ornatus (Newb.).

Newberry, J. S. 1888 A, p. 58, pl. xviii, figs. 3-3*b*. (Catopterus.)
Hay, O. P. 1899 E, p. 789.
Woodward, A. S. 1895 A, p. 3. (Catopterus.)
Triassic; Connecticut.

Redfieldius parvulus (W. C. Redfield.).

Redfield, W. C. 1841 A, p. 28. (Catopterus.)
De Kay, J. E. 1842 B, p. 386. (Catopterus.)
Egerton, P. G. 1849 B, p. 10. (Catopterus.)
Hay, O. P. 1899 E, p. 789.
Newberry, J. S. 1888 A, p. 60, pl. xvi, figs. 4, 5. (Catopterus.)
Woodward, A. S. 1895 A, p. 2. (Catopterus.)
Triassic; Connecticut.

Redfieldius redfieldi (Egerton.).

Egerton, P. G., in Lyell, C. 1847 B, p. 278. (Catopterus.)
1849 B, p. 8. (Catopterus.)
Hay, O. P. 1899 E, p. 789.
Newberry, J. S. 1888 A, p. 53, pl. xv, figs. 1-3. (Catopterus.)
Woodward, A. S. 1895 A, p. 3. (Catopterus.)
Triassic; Connecticut, New Jersey.

DICTYOPYGE Egerton. Type *D. macrura* Redfield.

Egerton, P. G., in Lyell, C. 1847 B, p. 276.
1849 B, p. 8.
1853 B, p. 277.
Emmons, E. 1856 A, p. 52.
Newberry, J. S. 1888 A, p. 61.
Redfield, W. C. 1856 A, p. 361.
Strüver, J. 1864 A. p. 322.
Traquair, R. H. 1877 A, p. 563.
Woodward, A. S. 1890 D, p. 16.
1895 A, p. 4.
Woodward, A. S. 1898 B, p. 88.
Zittel, K. A. 1890 A, p. 203.

Dictyopyge macrura (W. C. Redfield.).

Redfield, W. C. 1841 A, p. 27. (Catopterus.)
De Kay, J. E. 1842 B, p. 386. (Catopterus.)
Egerton, P. G., in Lyell, C. 1847 B, p. 275, pl. viii; pl. ix, fig. 1.
Emmons, E. 1857 A, p. 52, pl. ix, figs. 1, 2. (Catopterus.)

Newberry, J. S. 1888 A, p. 64, pl. xviii, figs. 1, 2.
Redfield, W. C. 1841 A, p. 27. (Catopterus.)
1856 A, p. 361. (Catopterus.)
1857 A, p. 185. (Catopterus.)
Woodward, A. S. 1890 D, p. 16.
1895 A, p. 4, fig. 1.
Triassic; Virginia.

ACIPENSERIDÆ.

Agassiz, L. 1843 B (1844), ii, pt. ii, p. 277. ("Accipenserides.")
Bridge, W. J. 1879 A.
1896 A, p. 534.
Brühl, B. C. 1847 A.
Cope, E. D. 1872 C, p. 320.
Davis, J. W. 1877 B.
Egerton, P. G. 1859 B.
Gegenbaur, C. 1898 A.
Göldi, E. A. 1883 A.
1884 A.
Goette, A. 1878 A, p. 442.
Günther, A. 1870 A, p. 332.
1880 A, p. 360.
1881 A, p. 687.
Hertwig, O. 1876 A, p. 378.
Iwanzow, N. 1887 A. (Scaphorhynchus.)
Jordan and Evermann 1896 A, p. 102.
Klaatsch, H. 1890 A, p. 146.
Kölliker, A. 1859 A. (Acipenserini.)
Köstlin, O. 1844 A, p. 402. ("Stör.")
Kosmak, G W. 1895 A, p. 11.
Müller, J. 1835 A.
Newberry, J. S. 1873 A, p. 256.
Parker, W. K. 1882 B.
Pollard, H. B. 1892 A.
Stannius, H. 1854 A.
Thacher, J. K. 1877 A.
1877 B.
Woodward, A. S. 1889 H.
1895 A, p. 42.
Zittel, K. A. 1890 A, p. 163.

ACIPENSER Linn. Type *A. sturio* Linn.

Linnæus, C., 1758, Syst. Nat., ed. x, p. 237.
Allis, E. P. 1900 A, p. 274.
Bridge, W. J. 1879 A.
Brühl, B. C. 1847 A.
Dean, B. 1895 A.
Gadow and Abbott 1895 A.
Gegenbaur, C. 1865 B, p. 95, pl. vi, fig. 1; pl. viii, figs. 2, 3.
1895 A, fig. 1.
1898 A.
Goette, A. 1878 A, p. 442.
Günther, A. 1880 A, p. 361.
Hay, O. P. 1895 A.
Huxley, T. H. 1872 A, p. 121.
Iwanzow, N. 1887 A. (On Scaphorhynchus.)
Jordan and Evermann 1896 A, p. 103.
Kittary, M. 1850 A, p. 389, pls. vi, vii.
Kölliker, A. 1860 B.
Köstlin, O. 1844 A.
Kosmak, G. W. 1895 A, p. 1, pls. xlvi-xlviii.
Maggi, L. 1898 E, fig. 21.
Metschnikoff, O. 1879 A, pl. xxiv, figs. 1-7.
Owen, R. 1866 A.
Parker, W. K. 1868 A.
1882 B.
Salensky, W. 1899 A, p. 178.
Stannius, H. 1854 A.
Stephan, P. 1900 A.
Thacher, J. K. 1877 B, pl. i, figs. 1, 2.
Van Wijhe, J. W. 1882 A, p. 220.
Williamson, W. C. 1849 A, p. 448, pl. lxii, fig. 11.
Woodward, A. S. 1889 H.
1895 A, p. 43.
Zograf, N. 1896 A.

Acipenser ornatus Leidy.

Leidy, J. 1873 C.
1873 A, p. 312.
1873 B, p. 350, pl. xxxii, fig. 58.
Woodward, A. S. 1895 A, p. 45.
Miocene; Virginia.

POLYODONTIDÆ.

Bridge, W. J. 1879 A.
1896 A, p. 536.
Browne, M. 1886 A. (Chondrosteus.)
Brühl, B. C. 1847 A. ("Spatularien.")
Collinge, W. E. 1895 A.
Gegenbaur, C. 1865 B, p. 99, pl. viii, fig. 4. (Polyodon.)
1898 A.
Günther, A. 1870 A, p. 346.
1880 A, p. 362.
Huxley, T. H. 1872 A, p. 122.
Jordan and Evermann 1896 A, p. 101.
Mivart, St. G. 1879 A, p. 471.
Müller, J. 1835 A. (Spatularia.)
Parker, W. K. 1871 A, p. 195.
Thacher, J. K. 1877 B.
Traquair, R. H. 1877 B.
1887 A. (Chondrosteus.)
Van Wijhe, J. W. 1882 A, p. 240
Woodward, A. S. 1889 H.
1895 A, pp. vii, 46.
1899 B, p. 461. (Gyrosteus)
Zittel, K. A. 1890 A, p. 164.

Crossopholis Cope. Type *C. magnicaudatus* Cope.

Cope, E. D. 1883 G G. (Crassopholis, *errore.*)
1885 Y, p. 1090.
1886 T, p. 161.
1887 S, p. 325.
Woodward, A. S. 1889 H, p. 29.
1895 A, p. 46.
1898 B, p. 94.
Zittel, K. A. 1890 A, p. 165.

Crossopholis magnicaudatus Cope.

Cope, E. D. 1883 GG.
1885 Y, p. 1090.
1886 T, p. 161, pl. i, figs. 1-3.
Woodward, A. S. 1895 A, p. 47.
Eocene; Wyoming.

Order PYCNODONTI.

Agassiz, L. 1843 B, ii, pt. ii, p. 181. ("Pycnodontes.")
Cornuel, J. 1877 A, p. 609. ("Pycnodontes.")
Davis, J. W. 1887 C, p. 495. (Pycnodontoidea.)
Didelot, L. 1875 A. ("Pycnodontes.")
Egerton, P. G. 1849 A.
1869 A, p. 381.
Fricke, K. 1875 A.
Günther, A. 1880 A, p. 366. (Pycnodontoidei.)
Heckel, J. J. 1850 A. ("Pycnodonten.")
1854 A. ("Pycnodonten.")
1856 A. ("Pycnodonten.")
Huxley, T. H. 1876 B, xiii, p. 411. (Pycnodonta.)
Lütken, C. 1868 B. (Lepidopleuridæ.)
1873 A, pp. 30, 45. (Pycnodontes.)
Owen, R. 1845 B, p. 70. ("Pycnodonts.")
1860 E, p. 160. (Pycnodontes.)
Pictet, F. J. 1854 A, p. 194. (Pycnodontes.)
Pictet and Jaccard 1860 A, p. 42. (Pycnodontes.)
Quenstedt, F. A. 1852 A, p. 209. ("Pleurolepiden.")
1885 A, p. 325. ("Pleurolepiden.")
Wagner, A. 1861 B, p. 49. (Pycnodontes.)
Young, 1866 A, p. 315. (Lepidopleuridæ, part.)
Zittel, K. A. 1890 A, p. 237. (Pycnodontidæ.)

PYCNODONTIDÆ.

Cope, E. D. 1877 N, p. 61.
1878 A, pp. 297, 298.
1885 Z, p. 7.
Davis, J. W. 1887 C, p. 495.
Günther, A. 1880 A, p. 366.
1881 A, p. 687.
Hancock and Howes 1872 A. ("Pycnodonts.")
Hay, O. P. 1898 A, p. 358.
1898 C, p. 347.
Heckel, J. J. 1856 A.
Huxley, T. H. 1872 A, p. 129.
King, W. 1850 A, p. 227.
Klaatsch, H. 1890 A, p. 149.
Newberry, J. S. 1873 A, p 258.
Nicholson and Lydekker 1889 A, p. 983.
Owen, R. 1845 B, p. 70. ("Pycnodonts.")
1860 E, p. 140.
Pictet, F. J. 1854 A, p. 194. (Pycnodontes.)
Steinmann and Döderlein 1890 A, p. 543.
Traquair, R. H. 1879 A, p. 380. (Pycnodontidæ.)
1896 A, p. 125.
Woodward, A. S. 1895 A, pp. xi, 189.
1896 C, p. 1.
1898 B, p. 101.
Young, J. 1866 A.
Zittel, K. A. 1890 A, p. 236.
1896 A, p. 411.

Typodus Quenstedt. Type *T. annulatus* Quenstedt.

Quenstedt, F. A., 1858, Der Jura, p. 781.
Egerton, P. G. 1869 A, p. 582. (Mesodon.)
Hay, O. P. 1899 E, p. 789.
Heckel, J. J. 1850 A, p. 365. (Mesodon.)
1856 A, 202. (Mesodon.)
Pictet, F. J. 1854 A, p. 203. (Mesodon.)
Pictet and Jaccard 1860 A, p. 45. (Mesodon.)
Quenstedt, F. A. 1852 A, p. 330. (Mesodon.)
Wagner, A. 1851 A, p. 56. (Mesodon; type *Gyrodus macropterus* Agassiz.)
1861 B, p. 69.
Woodward, A. S. 1895 A, p. 199. (Mesodon.)
1896 C, p. 13. (Mesodon.)
1898 B, p. 104. (Mesodon.)
Zittel, K. A. 1890 A, p. 247. (Mesodon.)

The name *Mesodon* was employed by Rafinesque for a mollusk in 1819. According to Mr. A. S. Woodward, *Typodus* is probably a synonym of *Mesodon*, and is here accepted provisionally as the name of this genus.

Typodus abrasus (Cragin).

Cragin, F. W. 1894 A, p. 72, pl. ii, figs. 18, 19. (Mesodon.)
Hay, O. P. 1899 E, p. 789.
Williston, S. W. 1900 A, p. 29. (Mesodon.)
1900 B, p. 256. (Mesodon abrasus; Lepidotus? sp.)
Woodward, A. S. 1895 A, p. 532. (Mesodon.)
Cretaceous (Neocomian); Kansas.

Typodus diastematicus (Cope).

Cope, E. D. 1894 F, p. 443, fig. 5. (Mesodon.)
Hay, O. P. 1899 E, p. 789.
Woodward, A. S. 1895 A, p. 213. (Mesodon.)
Cretaceous; Texas.

Typodus dumblei (Cope).

Cope, E. D. 1892 J, p. 128. (Microdon.)
1892 E, p. 256. (Microdon.)
1894 F, p. 444, pl. xx, fig. 7. (Mesodon.)
Hay, O. P. 1899 E, p. 789.
Woodward, A. S. 1895 A, p. 213. (Mesodon.)
Cretaceous; Texas.

CŒLODUS Heckel. Type *C. saturnus* Heckel.

Heckel, J. J. 1856 A, p. 202.
Cope, E. D. 1894 F, p. 447.
Davis, J. W. 1890 A, p. 415.
Priem, F. 1898 A, p. 230.
Quenstedt, F. A. 1885 A, p. 330.
Vetter, B. 1881 A, p. 34.
Woodward, A. S. 1895 A, p. 249.
Woodward and Sherborn 1890 A, p. 41.
Zittel, K. A. 1890 A, p. 248.

Cœlodus brownii Cope.

Cope, E. D. 1894 F, p. 447, pl. xx, fig. 10.
1894 A, p. 66.
Williston, S. W. 1900 A, p. 28, pl. vi, fig. 12.
1900 B, p. 254, pl. xxiv, fig. 12.
Woodward, A. S. 1895 A, p. 257.
Cretaceous (Comanche); Oklahoma.

Cœlodus stantoni Willist.

Williston, S W. 1900 A, p. 28, pl. vi, fig. 11; pl. viii, fig. 6.
1900 B, p. 255, pl. xxiv, fig. 11; pl. xxvi, fig. 6.
Cretaceous (Kiowa shales); Kansas.

PYCNODUS Agassiz. Type *Zeus platessus* Blainv.

Agassiz, L. 1843 B (1833), i, pl. G, fig. 1. (Name and figure only.)
1843 B, ii, pt. 1 (1833), p. 16; pt. ii (1844), p. 183 (Pycnodus); p. 201 (Periodus).
1844 A.
Bronn, H. G. 1837 A, p. 494, pl. xxv, fig. 3.
Cope, E. D. 1878 A, p. 297.
Cornuel, J. 1877 A, p. 620.
Didelot, L. 1875 A.
Egerton, P. G. 1849 A.
Heckel, J. J. 1850 A, p. 365.
1856 A, p. 204.
Leidy, J. 1873 B, p. 292.
King, W. 1850 A, p. 228.
Nicholson and Lydekker 1889 A, p. 984.
Owen, R. 1845 B, p. 70, pl. xxxiv.
Pictet, F. J. 1854 A, p. 197.
Pictet and Campiche 1858 A, p. 55.
Quenstedt, F. A. 1852 A, p. 212.
1885 A, p. 329.
Vetter, B. 1881 A, p. 25.
Wagner, A. 1851 A, pp. 35, 57.
Woodward, A. S. 1895 A, p. 275.
Zittel, K. A. 1890 A, p. 250.

Pycnodus carolinensis Emmons.

Emmons, E. 1858 B, p. 244, fig. 96.
Cope, E. D. 1875 V, p. 30.
Leidy, J. 1873 B, pp. 294, 350.
Woodward, A. S. 1895 A, p. 279.
Miocene; North Carolina.

Pycnodus phaseolus Hay.

Hay, O. P. 1899 E, p. 788.
Cope E. D. 1875 E, p. 280. (P. faba.)
Leidy, J. 1872 M, p. 163. (P. faba; preoccupied by Meyer, 1847.)
1873 B, pp. 292, 349, pl. xix, figs. 15, 16. (P. faba.)
Woodward, A. S. 1895 A, p. 265. (P. faba.)
Cretaceous; Mississippi, New Jersey.

Pycnodus robustus Leidy.

Leidy, J. 1857 F, p. 168.
1873 B, pp. 293, 350, pl. xxxvii, figs. 18, 19.
Woodward, A. S. 1895 A, p. 266.
Cretaceous; New Jersey.

Pycnodus sp. indet.

Emmons E. 1857 A, p. 50, fig. 25.
Triassic (Chatham); North Carolina.

HADRODUS Leidy. Type *H. priscus* Leidy.

Leidy, J. 1857 F, p. 167.
1873 B, p. 294.

This genus was suspected by Leidy to be reptilian, allied to *Placodus*.

Hadrodus priscus Leidy.

Leidy, J. 1857 F, p. 167.
1873 B, pp. 294, 350, pl. xix, figs. 17-20.
Cretaceous; Mississippi.

URANOPLOSUS Sauvage. Type *U. cotteaui* Sauvage.

Sauvage, H. E. 1879 A, p. 47, pl. i, fig. 1.
Cope, E. D. 1894 F, p. 445.

Uranoplosus arctatus Cope.

Cope, E. D. 1894 F, p. 445, pl. xx, fig. 8.
1894 A, p. 65. (No description.)
Cretaceous (Comanche); Oklahoma.

Uranoplosus flectidens Cope.

Cope, E. D. 1894 F, p. 446, pl. xx, fig. 9.
1894 A, p. 65. (No description.)
Cretaceous (Comanche); Oklahoma.

Order HOLOSTEI Müller.

Müller, J. 1846 C, pp. 147, 203.
Gadow, H. 1898 A, p. 8.
Giebel, C. G. 1847 A, p. 141.
Gill, T. 1872 C, p. 21. (Hyoganoidei.)
Jordan and Evermann 1896 A, p. 107.

Suborder GINGLYMODI Cope.

Cope E. D. 1872 C, p. 328.
Barkas, W. J. 1878 C, p. 203. (Lepidosteidæ.)
Cope, E. D., 1872 C, p. 330.
  1878 A, p. 295.
  1884 O, p. 52.
  1887 O, p. 1018.
  1889 R, p. 857.
Gill, T. 1872C, p. 21. (Rhomboganoidei.)
Günther, A. 1881 A, p. 687. (Lepidosteoidei.)
Hay, O. P. 1898 C, p. 341. (No name.)
Haeckel, E. 1895 A, p. 236. (Lepidostones.)
Huxley, T. H. 1861 B, p. 28. (Lepidosteidæ, as suborder.)
Jordan and Evermann 1896 A, p. 108. (Rhomboganoidea.)
Lütken, C. 1873 A, pp. 23, 45. (Lepidosteini.)
Nicholson and Lydekker 1889 A, p. 980. (Lepidosteoidea.)
Steinmann and Döderlein 1890 A, p. 569. (Euganoidei.)
Traquair, R. H. 1896 A, p. 126. (Aëtheospondyli.)
Woodward, A. S. 1893 A, p. 413. (Lepidosteoidei.)
  1895 A, pp. xxii, 415. (Aëtheospondyli, in part.)
  1898 B, p. ii. (Aëtheospondyli, in part.)
Zittel, K. A. 1890 A, p. 201 (Lepidosteidæ); p. 899 (Lepidostei).

LEPIDOTIDÆ.

Owen, R. 1860 E, p. 143.
Cope, E. D. 1877 N, p. 60.
  1878 A, p. 298.
  1889 R, p. 858. (Sphærodontidæ, Lepidotidæ.)
Günther, A. 1880 A, p. 368. (Sphærodontidæ.)
Hay, O. P. 1898 A, p. 358. (Semionotidæ.)
  1898 C, p. 347. (Semionotidæ.)
Nicholson and Lydekker 1889 A, p. 986.
Wagner A. 1863 A, p. 613 (Stylodontes); p. 617 (Sphærodontes).
Williamson, W. C. 1849 A, p. 441. (Lepidotus.)
Woodward, A. S. 1890 D, p. 30. (Semionotidæ.)
  1895 A, pp. ix, 49. (Semionotidæ.)
  1895 E, p, 8. (Semionotidæ.)
  1898 B, p. 95. (Semionotidæ.)
Zittel, K. A. 1890 A, p. 202 (Stylodontidæ); p. 207 (Sphærodontidæ).

LEPIDOTUS Agassiz. Type *Cyprinus elvensis* Blainville.

Agassiz, L. 1843 B (1837), ii, pp. 8, 233.
  1844 A.
Barkas, W. J. 1878 C, p. 205.
Branco, W. 1887 A.
Bronn, H. G. 1837 A, 485.
Collinge, W. E. 1893 A, p. 9.
Cornuel, J. 1877 A, p. 620.
Egerton, P. G. 1852 A.
  1869 A, p. 385.
Etheridge, R. 1889 A.
Fricke, K. 1875 A, p. 377.
Hay, O. P. 1898 C, p. 347.
Heckel, J. J. 1850 A, p. 362.
Kner, R. 1866 B, p. 313.
Nicholson and Lydekker 1889 A, p. 986.
Owen, R. 1845 B, p. 69, pls. 30, 31.
Pictet, F. J. 1854 A, p. 160.
Pictet and Jaccard 1860 A, p. 26.
Quenstedt, F. A. 1847 A, pls. i, ii.
  1852 A, p. 195.
  1885 A, p. 307.
Wagner A. 1863 A, p. 618.
Williamson, W. C. 1849 A, p. 441, pl. xl, figs. 3, 4.
Woodward, A. S. 1893 A.
  1893 D, pls. xlix, l.
  1895 A, p. 77.
  1898 A, p. 325.
Zittel, K. A. 1890 A, p. 208.

Lepidotus sp. indet.

Williston, S, W. 1900 A, p. 29.
  Cretaceous (Kiowa shales): Kansas.

ACENTROPHORUS Traquair. Type *A. varians* (Kirkby).

Traquair, R. H. 1877 A, p. 565.
Fritsch, A. 1895 A, p. 81.
Lutken, C. 1873 A, p. 26, footnote.
Newberry, J. S. 1888 A, p. 67.
Traquair, R. H. 1900 B, p. 523.
Woodward, A. S. 1895 A, p. 51.
Zittel, K. A. 1890 A, p. 203.

Acentrophorus chicopensis Newb.

Newberry, J. S. 1888 A, p. 69, pl. xix, figs. 3, 4.
  1887 A, p. 127. (No description).
Woodward, A. S. 1895 A, p. 54.
  Triassic; New Jersey, Connecticut.

SEMIONOTUS Agassiz. Type *S. bergeri* Agassiz.

Agassiz, L., 1832, Neues Jahrb. Mineral., p. 144.
1843 B (1837), ii, pt. 1, pp. 8, 222.
Barkas, W. J. 1878 C, p. 205.
Bronn, H. G. 1837 A, p. 485, pl. xxiv, fig. 4.
Egerton, P. G., in Lyell, C. 1847 B. (Ischypterus; type *Palæoniscus fultus.*)
1849 B, p. 8. (Ischypterus.)
Fraas, O. 1861 A.
Kner, R. 1866 B, p. 318.
Newberry, J. S. 1888 A, p. 24.
Nicholson and Lydekker 1889 A, p. 982.
Owen, R. 1845 B, p. 69.
Pictet, F. J. 1854 A, p. 163.
Quenstedt, F. A. 1852 A, p. 205.
1885 A, p. 320.
Redfield, W. C. 1853 A, p. 271. (Ischypterus.)
1856 A, p. 362. (Ischypterus, in part.)
1857 A. (Ischypterus, in part.)
Strüver, J. 1864 A.
Traquair, R. H. 1877 A. (Ischypterus.)
Williamson, W. C. 1849 A, p. 444.
Woodward, A. S. 1895 A, p. 55.
1898 B, p. 95.
Zittel, K. A. 1890 A, p. 203 (Ischypterus); p. 204 (Semionotus).

Semionotus agassizii (W. C. Redfield).

Redfield, W. C. 1841 A, p. 26. (Palæoniscus.)
De Kay, J. E. 1842 B, p. 386.
Egerton, P. G. 1849 B, p. 10. (Ischypterus.)
Giebel, C. G. 1848 A, p. 245. (Palæoniscus.)
Newberry, J. S. 1888 A, p. 30, pl. iii, fig. 1. (Ischypterus.)
Redfield, W. C. 1843 A, p. 135.
Traquair, R. H. 1877 A, p. 559. (Ischypterus.)
Woodward, A. S. 1891 A, p. 486.
1895 A, p. 62.
Triassic; New Jersey.

Semionotus alatus (Newb.).

Newberry, J. S. 1888 A, p. 37, pl. viii, figs. 1, 2. (Ischypterus.)
1887 A. (Ischypterus; no description.)
Woodward, A. S. 1895 A, p. 63.
Triassic; New Jersey.

Semionotus braunii (Newb.).

Newberry, J. S. 1888 A, p. 43, pl. xii, fig. 3; pl. xiii, figs. 1, 2. (Ischypterus.)
Gratacap, L. P. 1886 A, p. 243, figure. (Palæoniscus latus, *errore.*)
Newberry, J. S. 1887 A. (Ischypterus braunii; no description.)
Woodward, A. S. 1895 A, p. 63.
Triassic; New Jersey.

Semionotus elegans (Newb.).

Newberry, J. S. 1888 A, p. 37, pl. vii, fig. 2; pl. x, fig. 1; pl. xiv, figs. 1, 2. (Ischypterus.)
1887 A. (Ischypterus, no description.)
Woodward, A. S. 1895 A, p. 63.
Triassic: New Jersey.

Semionotus fultus (J. H. Redfield.)

Redfield, J. H. 1837 A, p. 37.
Agassiz, L. 1843 B, ii, pp. 48, 102, pl. viii, figs. 4, 5.
De Kay, J. E. 1842 B, p. 385.
Egerton, P. G., in Lyell, C. 1847 B, p. 277.
1849 B, p. 10. (Ischypterus.)
Fraas, E. 1861 A.
Giebel, C. G. 1848 A, p. 343. (Palæoniscus.)
Hitchcock, E. 1841 A, p. 459. (Palæoniscus.)
Newberry, J. S. 1888 A, p. 35, pl. vi, fig. 2; pl. vii, fig. 1. (Ischypterus.)
1888 A, p. 41, pl. xii, fig. 1. (I. macropterus.)
Redfield, W. C. 1841 A, p. 25. (Palæoniscus macropterus.)
1843 A, p. 135. (Palæoniscus.)
1857 A, p. 184. (Palæoniscus.)
Traquair, R. H. 1877 A, p. 559. (Ischypterus.)
Woodward, A. S. 1891 A, p. 486.
1895 A, p. 58.
Zittel, K. A. 1890 A, p. 203. (I. macropterus, I. fultus.)
Triassic; Massachusetts, Connecticut, New Jersey.

Semionotus gigas (Newb.).

Newberry, J. S. 1888 A, p. 49, pl. xiv, fig. 3. (Ischypterus.)
1887 A. (Ischypterus; no description.)
Woodward, A. S. 1895 A, p. 63.
Triassic; New Jersey.

Semionotus lenticularis (Newb.).

Newberry, J. S. 1888 A, p. 39, pl. x, figs. 2, 3. (Ischypterus.)
1887 A. (Ischypterus; no description.)
Woodward, A. S. 1895 A, p. 63.
Triassic; New Jersey.

Semionotus lineatus (Newb.).

Newberry, J. S. 1888 A, p. 40, pl. xi, figs. 1, 2. (Ischypterus.)
Woodward, A. S. 1895 A, p. 63.
Triassic; New Jersey.

Semionotus marshii (W. C. Redfield).

Redfield, W. C., in Newberry, J. S. 1888 A, p. 28, pl. ii, fig. 1. (Ischypterus.)
1856 A, p. 363. (No description.)
1857 A, p. 188. (No description.)
Woodward, A. S. 1895 A, p. 63.
Triassic; Massachusetts.

Semionotus micropterus (Newb.).

Newberry, J. S. 1888 A, p. 2, pl. xii, fig. 2. (Ischypterus.)
1887 A. (Ischypterus; no description.)
Woodward, A. S. 1895 A, p. 63.
Triassic; Connecticut.

Semionotus minutus (Newb.).

Newberry, J. S. 1888 A, p. 48, pl. xiii, figs. 5, *5a*. (Ischypterus.)
1887 A. (Ischypterus; no description.)
Woodward, A. S. 1895 A, p. 63.
Triassic; Connecticut.

Semionotus modestus (Newb.).

Newberry, J. S. 1888 A, p. 38, pl. ix, figs. 1, 3. (Ischypterus.)
1887 A. (Ischypterus; no description.)
Woodward, A. S. 1895 A, p. 63.
Triassic; New Jersey.

Semionotus ovatus (W. C. Redfield).

Redfield, W. C. 1841 A, p. 26.
De Kay, J. E. 1842 B, p. 386.
Egerton, P. G., in Lyell, C. 1847 B, p. 277, pl. ix, fig. 2. ("Tetragonolepis.")
Newberry, J. S. 1888 A, p. 27, pl. i, fig. 1. (Ischypterus.)
Traquair, R. H. 1877 A, p. 559. (Ischypterus.)
Woodward, A. S. 1891 A, p. 486.
1895 A, p. 63.
Triassic; Massachusetts, New Jersey.

Semionotus parvus (W. C. Redfield).

Redfield, W. C., in Newberry, J. S. 1888 A, p. 45, pl. xiii, fig. 4. (Ischypterus.)
Hitchcock, E. 1841 A, pl. xix. (No name.)
Newberry, J. S. 1887 A. (Ischypterus; no description.)
Woodward, A S 1895 A, p. 63.
Triassic; Massachusetts.

Semionotus robustus (Newb.).

Newberry, J. S. 1888 A, p. 36, pl. vi, fig. 1. (Ischypterus.)
1887 A. (Ischypterus; no description.)
Woodward, A. S. 1895 A, p. 63.
Triassic; New Jersey.

Semionotus tenuiceps (Agassiz).

Agassiz, L. 1843 B (1835), ii, pt. i, pp. 159, 303, pl. xivc, figs. 4, 5. (Eurynotus.)
"D. L. H." 1838 A, p. 199. (Palæoniscus latus.)
Deecke, W., Palæontographica, xxxv, p. 14. (Allolepidotus americanus.)
Egerton, P. G. 1849 B, p. 10. (Ischypterus.)
Emmons, E. 1857 A, p. 143, figs. 1, 2 (Ischypterus macropterus); p. 144, pl. ixa, fig. 3; text fig. 112 (Eurinotus tenuiceps, var. ceratocephalus).
1860 A, p. 188, fig. 164. (Eurinotus ceratocephalus.)
Giebel, C. G. 1848 A, p. 236.
Hitchcock, E. 1841 A, p. 459, pl. xxix, figs. 1 and 2. (Eurynotus.)
Newberry, J. S. 1888 A, p. 32, pl. v, figs. 1–3; pl. vii, fig. 3; p. 46, pl. xiii, fig. 3. (S. latus.)
Redfield, J. H. 1837 A, p. 39 (Eurynotus tenuiceps); p. 38, pl. ii (Palæoniscus latus).
Redfield, W. C. 1841 A, p. 26. (Palæoniscus latus.)
1843 A, p. 135. (P. latus.)
1856 A, p. 362. (P. latus.)
Traquair, R. H. 1877 A, p. 559. (Ischypterus.)
Woodward, A. S. 1891 A, p. 531 (S. tenuiceps); p. 486 (Palæoniscus latus).
1895 A, p. 59.
Triassic; Massachusetts, Connecticut, New Jersey.

LEPISOSTEIDÆ.

Beard, J. 1890, A, p. 183.
Brühl, B. C. 1847 A. (Lepidosteus.)
Cope, E. D. 1872 C, p. 330.
1878 A, p. 295.
1884 O, p. 52.
1887 O, p. 1018.
1889 R, p. 857.
Günther, A. 1870 A, p. 328.
1880 A, p. 367.
1881 A, p. 687.
Hay, O. P. 1895 A.
Hertwig, O. 1879 A.
Huxley, T. H. 1861 B, p. 28. (Lepidosteini.)
Jordan and Evermann 1896 A, p. 108.
Klaatsch, H. 1890 A, p. 125.
Kölliker, A. 1859 A. (Lepidosteini.)
Lütken, C. 1868 B, p. 430.
Müller, J. 1846 A, p. 208. (Lepisosteini.)
1846 B, p. 85. (Lepidosteini.)
Newberry, J. S. 1873 A, p. 255.
Nicholson and Lydekker 1889 A, p. 988.
Stannius, H. 1854 A. (Lepidosteini.)
Ussow, S. 1900 A. ("Lepidostien.")
Woodward, A. S. 1895 A, pp. xviii, 140.
Zittel, K. A. 1890 A, p. 222. (Ginglymodi.)

LEPISOSTEUS Lacépède. Type *L. gavialis*=*L. osseus*.

Lacépède, 1803, Hist. Nat. Poissons, vol. v, p. 331.
Most authors employ the orthography *Lepidosteus*. The original is given above.
Agassiz, L. 1843 B, ii, pt. ii, p. 4. (Lepidosteus.)
Allis, E. P. 1900 A, p. 273.
Andreæ, A. 1893 B. (Lepidosteus, Clastes.)
Balfour, F. M. 1882 A.
Baur, G. 1889 E.
1889 F, p. 469.
Beard, J. 1890 A, p. 182.
Bridge, T. W. 1896 A, p. 540.
Brühl, B. C. 1847 A.
Cope, E. D. 1869 F, p. 242. (Pneumatosteus, type *P. nahunticus*.)
1872 C, p. 319.
1873 E, p. 633. (Clastes, type *C. anax*.)
1875 C, p. 37. (Clastes.)
Cope, E. D. 1875 V, p. 30. (Pneumatosteus.)
1881 D, p. 184. (Clastes.)
1884 O, p. 52 (Pneumatosteus); p. 53 (Clastes).
Davidoff, M. 1880 A.
1880 B.
Eastman, C. R. 1900 A, p. 68.
Gadow and Abbott 1895 A.
Gegenbaur, C. 1865 B, p. 104, pl. vi, fig. 5; pl. viii, fig. 5.
1895 A, p. 6.
Goette, A. 1878 A, p. 453.
Günther, A. 1870 A, p. 328.
1880 A, p. 367.
Hay, O. P. 1895 A.
1896 B, p. 959.
1898 C, p. 345.

Hertwig, O. 1879 A, pls. i, ii.
Huxley, T. H. 1872 A, p. 124.
1883 A.
Klaatsch, H. 1890 A, p. 125.
Kosmak, G. W. 1895 A, p. 8.
Mackintosh, H. W. 1878 A, pl. ii, fig. 6.
Marsh, O. C. 1898 E, p. 567.
Müller, J. 1846 A.
1846 B.
1846 C.
Nickerson, W. S. 1893 A.
Nicholson and Lydekker 1889 A, p. 988. (Pneumatosteus.)
Owen, R. 1845 B, p. 74, pl. xxxv.
Parker, W. K. 1882 A.
Reissner, E. 1859 A, p. 254, pl. v.
Röse, C. 1894 B.
Stannius, H. 1846 A.
1854 A.
Stephan, P. 1900 A.
Thacher, J. K. 1877 B, pl. ii, fig. 3.
Traquair, R. H. 1896 A, p. 126.
1900 B, p. 523.
Van Wijhe, J. W. 1882 A, p. 265.
White C. A. 1883 A. (Clastes.)
Williamson, W. C. 1849 A, p. 439, pl. xl, figs. 1, 2.
Woodward, A. S. 1895 A, p. 440 (Lepidosteus): p. 445 (Clastes).
Zittel, K. A. 1890 A, p. 222. (Lepidosteus, Clastes.)
Zograf, N. 1896 A.

Lepisosteus aganus (Cope).

Cope, E. D. 1877 K, p. 38, pl. xxiii, figs. 10–29 (Clastes.)
Eocene (Wasatch); New Mexico.

Lepisosteus atrox Leidy.

Leidy, J. 1873 D, p. 97.
Cope, E. D. 1873 E, p. 633 (Clastes anax); p. 634 (C. atrox).
1884 O, p. 53, pl. ii, figs. 50–52 (Clastes anax); p. 54, pl. ii, figs. 1, 2 (C. atrox).
Eastman, C. R. 1900 A, p. 69, pl. i, fig. 2; pl. ii. (Lepidosteus.)
1900 E, p. 57. (Lepidosteus.)
Leidy, J. 1873 B, pp. 189, 349, pl. xxxii, figs. 14, 15.
Woodward, A. S. 1895 A, p. 444 (C. atrox); p. 445 (C. anax).
Eocene (Bridger); Wyoming.

Lepisosteus cuneatus (Cope).

Cope, E. D. 1884 O, p. 55, pl. i, fig. 6. (Clastes.)
1880 T, p. 303. (Clastes.)
Eastman, C. R. 1900 A, p. 68. (Lepidosteus.)
1900 E, p. 57. (Lepidosteus.)
Eocene (Manti beds); Utah.

Lepisosteus cycliferus (Cope).

Cope, E. D. 1873 E, p. 634. (Clastes.)
1877 K, p. 40. (Clastes.)
1884 O, p. 54, pl. ii, figs. 25–45. (Clastes.)
Eastman, C. R. 1900 A, p. 68. (Lepidosteus.)
Woodward, A. S. 1895 A, p. 445. (Clastes.)
Eocene (Bridger); Wyoming.

Lepisosteus glaber Marsh.

Marsh, O. C. 1871 G, p. 105.
Cope, E. D. 1873 E, p. 634. (Clastes.)
1884 O, p. 53.
Eastman, C. R. 1900 A, p. 67.
King, C. 1878 A, p. 376 (Clastes?); p. 405.
Woodward, A. S. 1895 A, p. 444.
Eocene (Bridger); Wyoming.

Lepisosteus integer (Cope).

Cope, E. D. 1877 K, p. 41, pl. xxiv, figs. 1–16. (Clastes.)
Eocene (Wasatch); New Mexico.

Lepisosteus nahunticus (Cope).

Cope, E. D. 1869 F, p. 242. (Pneumatosteus.)
1875 V, p. 31. (Pneumatosteus.)
Eastman, C. R. 1900 A, p. 68. (Lepidosteus.)
Miocene; North Carolina.

Lepisosteus notabilis Leidy.

Leidy, J. 1873 D, p. 98.
Cope, E. D. 1877 K, p. 40. (Clastes.)
Eastman, C. R. 1900 A, p. 68. (Lepidosteus.)
Leidy, J. 1873 B, pp. 192, 349, pl. xxxi, figs. 12, 13.
Woodward, A. S. 1895 A, p. 444.
Eocene (Bridger); Wyoming.

Lepisosteus occidentalis Leidy.

Leidy, J. 1856 F, p. 73. (Lepidotus.)
Cope, E. D. 1877 G, p. 574. (Lepidosteus.)
1884 O, p. 52. (Clastes.)
Leidy, J. 1856 C, p. 120. (Lepidotus haydeni; L. occidentalis.)
1856 F, p. 73. (Lepidotus haydeni.)
1860 A, p. 149, pl. xi, figs. 20–23. (Lepidotus.)
Woodward, A. S. 1895 A, p. 125 (Lepidotus haydeni); p. 126 (L. occidentalis).
Cretaceous (Laramie); Wyoming.

Lepisosteus osseus (Linn.).

Linnæus, C., 1758, Syst. Nat., ed. x, p. 313. (Esox.)
Agassiz, L. 1843 B (1836), ii, pt. ii, p. 1, pls. B′, B″.
Jordan and Evermann 1896 A, p. 110.
Leidy, J. 1860 B, p. 118, pl. xxv, fig. 1. (L. bison?).
Stephan, P. 1900 A, p. 355, fig. 3.
Williamson, W. C. 1849 A, p. 439, pl. xl, figs. 1, 2.
Recent; Vermont to Texas: Post-pliocene: South Carolina.

Lepisosteus simplex Leidy.

Leidy, J. 1873 D, p. 98.
Cope, E. D. 1877 K, p. 40. (Clastes.)
Eastman, C. R. 1900 A, p. 74, pl. i, fig, 1.
Leidy, J. 1873 B, pp. 191, 349, pl. xxxii, figs. 18, 26, 31–43.
Woodward, A. S. 1895 A, p. 444.
Eocene (Bridger); Wyoming.

Lepisosteus whitneyi Marsh.

Marsh, O. C. 1871 G, p. 105.
Eastman, C. R. 1900 A, p. 67.
King, C. 1878 A, p. 405.
Woodward, A. S. 1895 A, p. 445.
Eocene (Bridger); Wyoming.

Suborder HALECOMORPHI Cope.[1]

Cope, E. D. 1872 C, p. 330.
1877 N, p. 58.
1878 A, p. 295.
1887 O, p. 1018.
1889 R, p. 857.
Gill, T. 1872 C, p. 21. (Cycloganoidei.)
Günther, A. 1880 A, p. 370.
1881 A, p. 688. (Amioidei.)
Haeckel, E. 1895 A, p. 236. (Amiacei.)
Hay, O. P. 1898 C, p. 341. (No name.)
Heckel, J. J. 1850 A.
Huxley, T. H. 1861 B, p. 24. (Amiadæ, as suborder.)
Steinmann and Döderlein 1890 A, p. 576. (Amioidei.)
Traquair, R. H. 1896 A, p. 125. (Protospondyli, in part.)
Wagner, A. 1861 B, p. 43. (No name.)
Woodward, A. S. 1893 A, p. 413. ("Amioidei.")
1895 A, p. xxii; p. 48. (Protospondyli, in part.)
1898 B, p. 94. (Protospondyli, in part.)
Zittel, K. A. 1890 A, pp. 222, 899.
1896 A, p. 410. (Protospondyli.)

ISOPHOLIDÆ.

Hay, O. P. 1899 E, p. 790.
The generic name *Eugnathus*, being preoccupied, must be succeeded by *Isopholis* Zittel. The family name also must be changed accordingly.
Agassiz, L. 1843 B (1844), ii, p. 97. (Eugnathus.)
Hay, O. P. 1898 C, p. 346. (Eugnathidæ.)
Nicholson and Lydekker 1889 A, p. 986. (Eugnathidæ.)
Quenstedt, F. A. 1852 A, p. 204. (Eugnathus.)
1885 A, p. 319. (Eugnathus.)
Wagner, A. 1863 A, p. 670. (Eugnathus.)
Woodward, A. S. 1895 A, pp. xiv, 285. (Eugnathidæ.)
1898 B, p. 106. (Eugnathidæ.)
Zittel, K. A. 1890 A, p. 212. (Saurodontidæ, in part.)

PTYCHOLEPIS Agassiz. Type *P. bollensis* Agassiz.

Agassiz L., 1832, Neues Jahrb. Mineral., p. 132. (*Fide* A. S. Woodward.)
1843 B (1844), ii, pt. ii, p. 107.
Bronn, H. G. 1837 A, p. 488.
Egerton, P. G. 1852 B.
Newberry, J. S. 1888 A, p. 65.
Quenstedt, F. A. 1852 A, p. 208.
1885 A, p. 318.
Steinmann, and Döderlein 1890 A, p. 572.
Williamson, W. C. 1849 A, p. 444.
Woodward, A. S. 1895 A, p. 316.
1895 D.
Zittel, K. A. 1890 A, p. 213.

Ptycholepis marshii Newb.

Newberry, J. S. 1878 B.
Lesley, J. P. 1889 A, p. 830, figure.
Newberry, J. S. 1888 A, p. 66, pl. xix, figs. 1–2*a*.
Woodward, A. S. 1895 A, p. 324.
Triassic; Connecticut.

MACROSEMIIDÆ.

Cope, E. D. 1889 R, p. 858.
Agassiz. L., 1834, Neues Jahrb. Mineral., p. 387. (Macrosemius.)
Bronn, H. G. 1837 A, p. 492. (Macrosemius.)
Hay, O. P. 1898 C, p. 347.
Wagner, A. 1851 A, p. 73. (Macrosemius.)
Woodward, A. S. 1895 A, p. 163.

MACREPISTIUS Cope. Type *M. arenatus* Cope.

Cope, E. D. 1894 F, p. 441.
Woodward, A. S. 1895 A, p. 173.

Macrepistius arenatus Cope.

Cope, E. D. 1894 F, p. 441, pl. xix, fig. 2.
Cope, E. D. 1894 A, p. 65.
Woodward, A. S. 1895 A, p. 173.
Cretaceous (Trinity); Texas.

PACHYCORMIDÆ.

Woodward, A. S. 1895 A, p. 374.
Cope, E. D. 1875 E, p. 244 A. (Order Actinochiri; family Pelecopteridæ.)
1877 J, p. 822. (Erisichtheidæ.)
1878 A, p. 299. (Actinochiri; Pelecopteridæ.)
1892 V. (Protosphyrænidæ.)
Crook, A. R. 1892 A, p. 109. (Protosphyrænidæ.)
Dollo, L. 1892 B, p. 182. (Protosphyrænidæ.)
Felix, J. 1890 A, p. 302. (Pelecopteridæ.)
Loomis, F. B. 1900 A, p. 221.
Nicholson and Lydekker 1889 A, p. 996. (Protosphyrænidæ.)
Stewart, A. 1900 A, p. 362.
Woodward, A. S. 1897 A, p. 158.
1898 B, p. 109.

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[1] This subordinal name is here employed in a wider sense than was given to it by Cope.

PROTOSPHYRÆNA Leidy. Type *P. ferox* Leidy.

Leidy, J. 1856 O, p. 302.
Agassiz, L. 1843 B, Feuill (1835), p. 55; iii (1839), p. 150, pl. xa, figs. 1-4 (Ptychodus, in part); v, pt. 1 (1844), p. 102 (Saurocephalus).
Cope, E. D. 1871 D, p. 415.
1872 F, p. 340.
1872 E E, p. 281. (Erisichthe, type *E. nitida.*)
1874 C, p. 41. (Erisichthe.)
1875 E, pp. 189, 217, 275 (Erisichthe); p. 244 C (Pelecopterus).
1877 J, p. 821. (Erisichthe.)
1878 A, pp. 298, 299. (Erisichthe and Pelecopterus.)
1878 O. (Erisichthe.)
1886 R.
1886 S. (Protosphyræna and Pelecopterus.)
1888 V.
1892 V.
1892 W.
Davies, W. 1878 A.
1886 A.
Felix, J. 1890 A.
Hay, O. P. 1898 D, p. 26.
Hitchcock, Fanny R. 1888 A. (Pelecopterus.)
Leidy, J. 1857 I.
Loomis, F. B. 1900 A, p. 215.
Newton, E. T. 1878 A.
1878, in Dixon 1878 A, p. 401.
Nicholson and Lydekker 1889 A, p. 996.
Stewart, A. 1898 A, p. 22.
1900 A, p. 362.
Woodward, A. S. 1888 I, p. 320.
1894 A.
1895 A, p. 399.
1898 B, p. 111.
Woodward, H. 1886 A, p. 4. (Pelecopterus.)
Zittel, K. A. 1890 A, p. 78 (Pelecopterus, syn. of Ptychodus); p. 261 (Pelecopterus); p. 263 (Protosphyræna).
1896 A, p. 412.

Protosphyræna angulata Cope.

Cope, E. D. 1872 I, pp. 333, 337. (Portheus.)
1872 F, p. 342. (Portheus.)
1872 EE, p. 281. (Erisichthe.)
1875 E, p. 275. (Erisichthe.)
1875 V, p. 32.
Felix, J. 1890 A, p. 293. (Portheus.)
Loomis, F. B. 1900 A, p. 222.
Newton, E. T. 1878 A, p. 794.
Woodward, A. S. 1895 A, p. 413.
Cretaceous; North Carolina.

Protosphyræna bentoniana Stewart.

Stewart, A. 1898 A, p. 27, pl. i, figs. 2-3b. (P. bentonia, *errore typog.*)
1900 A, p. 365. (P. bentoniana.)
Cretaceous (Niobrara); Kansas.

Protosphyræna chirurgus (Cope).

Cope, E. D. 1875 E, pp. 244 E, 273, pl. xlviii, fig. 1; pl. liv, fig. 9. (Pelecopterus.)
Cretaceous (Niobrara); Kansas.

Protosphyræna dimidiata (Cope).

Cope, E. D. 1878 A, p. 300. (Erisichthe.)
Cope, E. D. 1877 J, p. 822. (E. nitida, in part.)
Cretaceous (Niobrara); Kansas.

Protosphyræna gigas Stewart.

Stewart, A. 1899 C, p. 110.
Loomis, F. B. 1900 A, p. 221.
Stewart, A. 1900 A, p. 367.
Cretaceous (Pierre); Kansas.

Protosphyræna gladius (Cope).

Cope, E. D. 1873 N, p. 337. (Portheus.)
1874 C, p. 40. (Portheus.)
1875 E, pp. 244 E, 273, pl. xliv, fig. 12; pl. lii, fig. 3. (Pelecopterus.)
Cretaceous (Niobrara); Kansas.

Protosphyræna nitida (Cope).

Cope, E. D. 1872 EE, p. 280. (Erisichthe.)
1874 C, p. 42. (Erisichthe.)
1875 E, pp. 217, 275, pl. xlviii, figs. 3-8. (Erisichthe.)
1877 J, p. 821. (Erisichthe nitida, in part; see P. dimidiata.)
Felix, J. 1890 A, pls. xii-xiv.
Loomis, F. B. 1900 A, p. 227, pl. xix, figs. 6, 7; p. 223, text fig. 4, *c*.
Newton, E. T. 1878 A, p. 794.
Woodward, A. S. 1895 A, p. 409.
Cretaceous (Niobrara); Kansas.

Protosphyræna obliquidens Loomis.

Loomis, F. B. 1900 A, p. 225, pl. xx, figs. 1-4.
Cretaceous (Niobrara); Kansas.

Protosphyræna penetrans (Cope).

Cope, E. D. 1877 J, p. 822. (Erisichthe.)
Crook, A. R. 1892 A, p. 109.
Felix, J. 1890 A, p. 297, pl. xiv, fig. 1.
Loomis, F. B. 1900 A, p. 224, pl. xix, figs. 1-5; p. 223, text fig. 4, *b*.
Newton, E. T. 1878 A, p. 795.
Stewart, A. 1898 D, p. 192.
1900 A, p. 369, pl. lxiii; text fig. 4.
Woodward, A. S. 1895 A, p. 409.
Cretaceous (Niobrara); Kansas.

Protosphyræna perniciosa (Cope).

Cope, E. D. 1874 C, p. 41. (Ichthyodectes.)
1875 E, pp. 244 D, 273, pl. xliv, fig. 13; pl. xlviii, fig. 2; pl. lii, fig. 2. (Pelecopterus.)
Woodward, A. S. 1895 A, p. 414.
Cretaceous (Niobrara); Kansas.

Protosphyræna recurvirostris Stewart.

Stewart, A. 1898 D, p. 191, text fig. 1.
1900 A, p. 366, text fig. 2.
Cretaceous (Niobrara); Kansas.

Protosphyræna tenuis Loomis.

Loomis, F. B. 1900 A, p. 226, pl. xx, figs. 5-7; p. 223, text fig. 4, *a*.
Cretaceous (Niobrara); Kansas.

Protosphyræna ziphioides (Cope).

Cope, E. D. 1877 J, p. 823. (Erisichthe.)

Felix, J. 1890 A, p. 297.
Loomis, F. B. 1900 A, p. 222. (Erisichthe xiphiodes.)
Newton, E. T. 1878 A, p. 795.
Woodward, A. S. 1895 A, p. 413.
Cretaceous (Niobrara); Kansas.

Protosphyræna occidentalis Stew.

Stewart, A 1898 A, p. 28, pl. i, figs. 1*a*, 1*b*.
1900 A, p. 368, pl. lvii, figs. 1*a*, 1*b*.
Cretaceous (Niobrara); Kansas.

AMIIDÆ.

Baur, G. 1889 F, p. 470.
Beard, J. 1890 A, p. 184.
Bridge, T. W. 1877 A.
1896 A, p. 537.
Cope, E. D. 1872 C, p. 330.
1877 N, p. 58.
1878 A, p. 295.
1887 O, p. 1018.
1889 R, p. 857.
Günther, A. 1870 A, p. 324.
1880 A, p. 372.
1881 A, p. 688.
Hay, O. P. 1898 C, p. 347.
Huxley, T. H. 1872 A, p. 127.
Jordan and Evermann 1896 A, p. 112.
Klaatsch, H. 1890 A, p. 178.
Kölliker, A. 1859 A, p. 7.
Lütken, C. 1873 A, p. 39.
Nicholson and Lydekker 1889 A, p. 988.
Pictet, F. J. 1854 A, p. 134. (Amiades.)
Steinmann and Döderlein 1890 A, p. 577.
Woodward, A. S. 1895 A, pp. xvi, 360.
Zittel, K. A. 1890 A, p. 233. (Halecomorphi.)

Amiopsis Kner. Type *A. prisca* Kner.

Kner, R. 1863 A, p. 126.
Woodward, A. S. 1895 A, p. 371.
Zittel, K. A. 1890 A, p. 234.

Amiopsis ? dartoni Eastman.

Eastman, C. R. 1899 E, p. 406, pl. xlviii, figs. 1, 2.
Jurassic; South Dakota.

Amia Linn. Type *A. calva* Linn.

Linnæus C., 1766, Syst. Nat., ed. xii, p. 500.
Allis, E. P. 1889 A.
1899 A.
1899 B.
1900 A.
Andreæ, A. 1893 B.
Baur, G. 1889 F, p. 469.
1896 C, p. 662.
Beard, J. 1890 A, p. 182.
Bridge T. W. 1877 A.
1896 A, p. 537.
Cope, E. D. 1872 C, p. 319.
1879 N.
1884 O, pp. 742, 745.
1897 A, p. 321.
Davidoff, M. 1880 A.
1880 B.
Dean, B. 1895 A.
Franque, H. 1847 A.
Gadow and Abbott 1895 A.
Gegenbaur, C. 1865 B, p. 102, pl. vi, fig. 4; pl. viii, fig. 7.
1895 A, p. 6.
Goette, A. 1878 A, p. 453.
Günther, A. 1870 A, p. 324.
Hay, O. P. 1895 A.
1898 C, p. 343.
Hulke, J. W. 1868 A, p. 424.
Huxley, T. H. 1872 A, p. 124.
1876 A, p. 57.
1883 A.
Jordan and Evermann 1896 A, p. 112.
Klaatsch, H. 1890 A, p. 178.
1896 A, p. 323.
Kner, R. 1863 A, p. 126.
Kölliker, A. 1859 A.
1860 A.
1863 A, p. 38, figs. 17–19.
Leidy, J. 1873 B, p. 185. (Protamia and Hypamia).
Leidy, J. 1873 D, p. 98. (Protamia and Hypamia).
Lütken, C. 1873 A, p. 39.
Mackintosh, H. W. 1878 A, pls. i, ii.
Marsh, O. C. 1877 E.
Müller, J. 1846 A, p. 201.
1846 B, p. 78.
1846 C.
Newton, E. T. 1899 A, p. 1.
Nicholson and Lydekker 1889 A, p. 987.
Owen, R. 1845 B, p. 75.
Parker, W. K. 1882 A, p. 488.
Ryder, J. A. 1886 A, p. 1001.
Sagemehl, M. 1883 A.
1884 A.
Shufeldt, R. 1885 B.
Stannius, H. 1846 A.
1854 A.
Stephan, P. 1900 A.
Thacher, J. K. 1877 B, pl. ii, fig. 6.
Traquair, R. H. 1896 A, p. 125.
1900 B, p. 524.
Van Wijhe, J. W. 1882 A, p. 279.
Woodward, A. S. 1895 A, p. 367.
Zittel, K. A. 1890 A, p. 235.

Amia depressa Marsh.

Marsh, O. C. 1871 G, p. 105.
King, C. 1878 A, p. 405.
Osborn, Scott, and Speir 1878 A, p. 102. (Identification doubtful.)
Woodward, A. S. 1895 A, p. 372.
Eocene (Bridger); Wyoming.

Amia dictyocephala Cope.

Cope, E. D. 1875 G, p. 3.
1884 O, p. 745, pl. lix, fig. 1.

Woodward, A. S. 1895 A, p. 372.
Eocene (Amyzon shales); Colorado.
"*Amia reticulata*," referred to by Cope in works above cited, appears to be a rejected name for A. *dictyocephala*.

Amia elegans Leidy.

Leidy, J. 1873 D, p. 98. [Amia (Hypamia).]
King, C. 1878 A, p. 405. (Hypamia.)
Leidy, J. 1873 B, pp. 189, 349, pl. xxxii, figs. 19-22. [Amia (Hypamia).]
Woodward, A. S. 1895 A, p. 373.
Eocene (Bridger); Wyoming.

Amia gracilis Leidy.

Leidy, J. 1873 D, p. 98. [Amia (Protamia).]
1873 B, pp. 188, 348, pl. xxxii, figs. 23, 24. [Amia (Protamia).]
Woodward, A. S. 1895 A, p. 373.
Eocene (Bridger); Wyoming.

Amia macrospondyla Cope.

Cope, E. D. 1891 A, p. 2, pl. i, fig. 2.
Woodward, A. S. 1895 A, p. 372.
Miocene; N. W. Territory, Canada.

Amia media Leidy.

Leidy, J. 1873 D, p. 98. (Protamia.)
King, C. 1878 A, p. 405.
Leidy, J. 1873 B, pp. 188, 348, pl. xxxii, figs. 7-11. [Amia (Protamia.)]
Woodward, A. S. 1895 A, p. 373.
Eocene (Bridger); Wyoming.

Amia newberriana Marsh.

Marsh, O. C. 1871 G, p. 105.
King, C. 1878 A, p. 405.
Woodward, A. S. 1895 A, p. 372.
Eocene (Bridger); Wyoming.

Amia scutata Cope.

Cope, E. D. 1875 G, p. 3.
1884 O, p. 745, pl. lx, fig. 1.
Osborn, Scott, and Speir 1878 A, p. 102.
Woodward, A. S. 1895 A, p. 372.
Eocene (Amyzon shales); Colorado.

Amia uintaensis Leidy.

Leidy, J. 1873 D, p. 98. [Amia (Protamia).]
King, C. 1878 A, p. 405.
Leidy, J. 1873 B, pp. 185, 348, pl. xxxii, figs. 1-6. (Protamia.)
Osborn, Scott, and Speir 1878 A, p. 101.
Woodward, A. S. 1895 A, p. 373.
Eocene (Bridger); Wyoming.

Amia whiteavesiana Cope.

Cope, E. D. 1891 A, p. 2, pl. i, fig. 1.
Woodward, A. S. 1895 A, p. 372.
Lower Miocene; N. W. Territory, Canada.

PAPPICHTHYS Cope. Type *P. plicatus* Cope.

Cope, E. D. 1873 E, p. 634.
Andreæ, A. 1893 B.
Cope, E. D. 1881 D, p. 184.
1882 E, p. 190.
1884 O, p. 56.
Hay, O. P. 1895 A, p. 12.
Newton, E. T. 1899 A, p. 2.
Nicholson and Lydekker 1889 A, p. 991.
Woodward, A. S. 1895 A, p. 373.
Zittel, K. A. 1890 A, p. 236.

Pappichthys corsoni Cope.

Cope, E. D. 1873 E, p. 636.
1873 E, p. 636. (P. symphysis.)
1884 O, p. 60, pl. iv, figs. 21-36.
Osborn, Scott, and Speir 1878 A, p. 104.
Woodward, A. S. 1895 A, p. 373.
Eocene (Bridger); Wyoming.

Pappichthys lævis Cope.

Cope, E. D. 1873 E, p. 636.
Cope, E. D. 1884 O, p. 58, pl. iii, figs. 2-11.
Osborn, Scott, and Speir 1878 A, p. 104.
Woodward, A. S. 1895 A, p. 373.
Eocene (Bridger); Wyoming.

Pappichthys plicatus Cope.

Cope, E. D. 1873 E, p. 634.
1884 O, p. 59, pl. iii, figs. 12-19; pl. iv, figs. 1-5.
King, C. 1878 A, p. 405.
Osborn, Scott, and Speir 1878 A, p. 104.
Woodward, A. S. 1895 A, p. 373.
Eocene (Bridger); Wyoming.

Pappichthys sclerops Cope.

Cope, E. D. 1873 E, p. 635.
1884 O, p. 57, pl. iii, fig. 1.
Woodward, A. S. 1895 A. p. 373.
Eocene (Bridger); Wyoming.

Order NEMATOGNATHI Gill.

Gill, T. 1861 A, pp. 11, 56.
Allis, E. P. 1900 A, p. 271.
Bridge and Haddon 1892 A.
Brühl, B. C. 1847 A. ("Siluroiden.")
Cope, E. D. 1872 C, p. 330.
1878 A, p. 295.
1884 O, p. 61.
1886 D, p. 1031.
1889 R, p. 857.
Dean, B, 1891 A, p. 315. ("Siluroids.")
Gill, T. 1872 C, pp. xxxviii, 18.
1893 A, p. 132.
1896 C, p. 912. ("Siluroids.")
Göldi, E. A. 1883 A.
1884 A.
Hertwig, O. 1876 A. (Siluroidei.)
Jordan and Evermann 1896 A, p. 114.
McMurrich, J. P. 1884 B.

Müller, J. 1846 B, p. 82. ("Siluroiden.")
Parker, W. K. 1868 A, p. 22. ("Siluroids.")
Pollard, H. B. 1894 A.
1895 A.
Stannius, H. 1854 A. (Siluroidei.)
Woodward, A. S. 1898 B, p. 119.
Zittel, K. A. 1890 A, p. 260.

SILURIDÆ.

Bridge, W. J. 1879 A.
1896 A, p. 550.
Bridge and Haddon 1889 A.
1892 A.
Brühl, B. C. 1847 A. ("Siluroiden.")
Cope, E. D. 1872 C, p. 331.
Dareste, C. 1872 A, p. 945. ("Siluroides.")
Davis, J. W. 1880 A, p. 355.
Gegenbaur, C. 1869 B.
1898 A.
Gill, T. 1893 A, p. 132.
Göldi, E. A. 1883 A.
1884 A.
Günther, A. 1864 A, p. 1.
1880 A, p. 559.
1881 A, p. 692.
Hertwig, O. 1876 A.
Huxley, T. H. 1861 B, p. 33.
Ihering, H. 1891 B, p. 498.
Jordan, D. S. 1891 A.
Jordan and Evermann 1896 A, p. 115.
Klaatsch, H. 1890 A, p. 184.
Klein, E. F. 1881 A.
Klein, E. F. 1886 A.
Koken, E. 1891 B, p. 26.
Kölliker, A. 1859 A. (Siluroidei.)
McMurrich, J. P. 1884 A.
1884 B.
Nicholson and Lydekker 1889 A, p. 1001.
Newton, E. 1889 A.
Owen, R. 1845 B, p. 86. ("Siluroids.")
1886 A, p. 10 *et seq.*
Pictet, F. J. 1854 A, p. 119. ("Siluriens.")
Pollard, H. B. 1894 A.
1894 B.
1895 A.
Ryder, J. A. 1886 A, p. 1003. (Ameiurus.)
Sagemehl, M. 1884 A, p. 1.
Stannius, H. 1854 A. (Siluroidei.)
Stephan, P. 1900 A. ("Siluridés.")
Vaillant, L. 1883 A.
Woodward, A. S. 1889 C.
1891 D.
Wright, R. R. 1884 A.
Zittel, K. A. 1890 A, p. 260.

RHINEASTES Cope. Type *R. peltatus* Cope.

Cope, E. D. 1872 R, p. 486.
1873 E, p. 637 (Phareodon, in part); p. 638 (Rhineastes, with subgenera Rhineastes and Astephus).
1884 O, p. 62. (With subgenera Rhineastes and Astephus.)
1891 A, p. 2.
Nicholson and Lydekker 1889 A, p. 1002.
Osborn, Scott, and Speir 1878 A, p. 100. (Sp. indet. described.)

Rhineastes arcuatus Cope.

Cope, E. D. 1873 E, pp. 638, 641.
1884 O, pp. 63, 66, pl. v, fig. 12.
Leidy, J. 1873 D, p. 99. (Pimelodus antiquus; no description.)
1873 B, pp. 193, 348, pl. xxxii, figs. 44-46. (Pimelodus antiquus.)
Eocene (Bridger); Wyoming.

Rhineastes calvus Cope.

Cope, E. D. 1873 E, pp. 638, 640.
1884 O, pp. 63, 65, pl. v, figs. 3, 4.
Eocene (Bridger); Wyoming.

Rhineastes pectinatus Cope.

Cope, E. D. 1874 D, p. 49.
Cope, E. D. 1874 B, p. 459.
1875 G, p. 3.
1884 O, p. 747, pl. v, fig. 13.
Tertiary (Eocene?); Colorado.

Rhineastes peltatus Cope.

Cope, E. D. 1872 R, p. 486.
1873 E, p. 639.
1884 O, p. 63, pl. v, figs. 1, 2.
Eocene (Bridger); Wyoming.

Rhineastes radulus Cope.

Cope, E. D. 1873 E, pp. 638, 639.
1884 O, p. 67, pl. v, figs. 14-17.
King, C. 1878 A, p. 405.
Eocene (Bridger); Wyoming.

Rhineastes rhæas Cope.

Cope, E. D. 1891 A, p. 3, pl. i, fig. 3.
Oligocene or Lower Miocene; Northwest Territory, Canada.

Rhineastes smithii Cope.

Cope, E. D. 1872 R, p. 486.
1873 E, p. 639.
1884 O, pp. 63, 64, pl. v, figs. 5-11.
Eocene (Bridger); Wyoming.

AMEIURUS Rafinesque. Type *A. cupreus* Raf.=*A. natalis Le Sueur.*

Rafinesque, C. S., 1820, Ichthyol. Ohioensis, p. 65.
Allis, E. P. 1900 A, p. 271.
Günther, A. 1864 A, p. 98. (Amiurus.)
1880 A, p. 567. (Amiurus.)
Jordan and Evermann 1896 A, p. 135.
McMurrich, J. P. 1884 A.
1884 B.
Ryder, J. A. 1886 A, p. 1003.
Wright, R. R. 1884 A.

Ameiurus cancellatus Cope.

Cope, E. D. 1891 A, p. 3, pl. i, figs. 4, 5.
Oligocene; Northwest Territory, Canada.

Ameiurus maconnellii Cope.

Cope, E. D. 1891 A, p. 4, pl. i, figs. 6, 7.
Oligocene; Northwest Territory, Canada.

Order ISOSPONDYLI Cope.

Cope, E. D. 1872 C, p. 332.
1877 N, p. 60.
1878 A, pp. 295, 296.
1884 O, p. 67.
1887 O, p. 1018.
1889 R, p. 857.
Gill, T. 1872 C, p. 15.
Jordan, D. S. 1891 A, p. 112.
Jordan and Evermann 1896 A, p. 407.
Traquair, R. H. 1896 A, p. 126.
1900 B, p. 524.
Woodward, A. S. 1895 A, pp. xix, 446.
1898 B, p. 113.

PHOLIDOPHORIDÆ.

Eastman, C. R. 1899 E, p. 399.
Traquair, R. H. 1900 B, p. 524.
Woodward, A. S. 1890 D, p. 43.
1895 A, p. 446.
Woodward, A. S. 1898 B, p. 114.
Zittel, K. A. 1890 A, p. 212. (Saurodontidæ, in part).

PHOLIDOPHORUS Agassiz. Type *P. bechei* Agassiz.

Agassiz, L., 1832, Neues Jahrb. Mineral., p. 145.
1843 B (1844), ii, pt. 1, p. 271.
Eastman, C. R. 1899 E, p. 399.
Giebel, C. G. 1848 A, p. 208.
Kner, R. 1866 B, p. 324.
1866 C, p. 32.
Lütken, C. 1873 A, p. 324.
Quenstedt, F. A. 1852 A, p. 207.
1885 A, p. 319.
Vetter, B. 1881 A, p. 58.
Wagner, A. 1863 A, p. 27.
Woodward, A. S. 1890 D, p. 43.
1895 A, p. 447.
1895 D.
1898 B, p. 114.
Woodward and Sherborn 1890 A, p. 146.
Zittel, K. A. 1890 A, p. 213.

Pholidophorus americanus Eastman.

Eastman, C. R. 1899 A, p. 642.
1899 E, p. 398, pls. xlv–xlvii.
Jurassic; South Dakota.

CHIROCENTRIDÆ.

Günther, A. 1868 A, p. 475.
Cope, E. D. 1870 L. (Saurodontidæ.)
1871 D, p. 414. (Saurodontidæ.)
1872 F, p. 337. (Saurodontidæ.)
1872 I, p. 327. (Saurodontidæ.)
1875 E, p. 183. (Saurodontidæ.)
1877 G, p. 588. (Saurodontidæ.)
1888 V, p. 1019. (Saurocephalidæ.)
1892 V. (Saurocephalidæ.)
Crook, A. R. 1892 A, pp. 111, 121. (Ichthyodectidæ.)
Cuvier and Valenciennes, 1846, Hist. Nat. Poissons, xix, p. 150. ("Chirocentres.")
Günther, A. 1880 A, p. 663.
Loomis, F. B. 1900 A, p. 236.
Nicholson and Lydekker 1889 A, p. 998. (Saurocephalidæ.)
Reis, O. M. 1895 C, p. 182. (Ichthyodectidæ.)
Steinmann and Döderlein 1890 A, p. 580. (Saurocephalidæ.)
Stewart, A. 1898 A, p. 21. (Saurodontidæ.)
1898 C, p. 179. (Saurodontidæ.)
1899 C, p. 107. (Saurodontidæ.)
1900 A, p. 262 (Ichthyodectidæ); p. 310 (Saurodontidæ).
Woodward, A. S. 1898 B, p. 118. (Saurodontidæ or Ichthyodectidæ.)
Zittel, K. A. 1890 A (1888), p. 262. (Saurocephalidæ.)

ICHTHYODECTINÆ.

Crook, A. R. 1892 A, pp. 111, 121. (Ichthyodectidæ, part.)
Stewart, A. 1899 C, p. 107. (Ichthyodectidæ.)
1900 A, p. 262. (Ichthyodectidæ.)

PORTHEUS Cope. Type *P. molossus* Cope.

Cope, E. D. 1871 K, p. 175.
1872 F, pp. 339, 341.
1872 I, pp. 330, 331.
1873 N, p. 338.
1874 C, p. 39.
1875 E, pp. 184, 189, 204, 273, pl. lv, fig. 1.
1892 V.
Crook, A. R. 1892 A, pp. 114, 122.
Günther, A. 1880 A, p. 500.
Hay, O. P. 1898 B, p. 646. (Xiphactinus.)
1898 D, p. 25, figs. 1–16. (Xiphactinus.)
? Leidy, J. 1870 H, p. 12. (Xiphactinus; type *X. audax.*)
Loomis, F. B. 1900 A, p. 246.

Newton, E. T. 1877 A.
1878 B.
Nicholson and Lydekker 1889 A, p. 998.
Stewart, A. 1898 B, p. 115. (Xiphactinus.)
1898 C, pp. 180, 184. (Xiphactinus.)
1899 A, p. 19. (Xiphactinus.)
1899 C, p. 107. (Xiphactinus.)
1900 A, p. 265. (Xiphactinus.)
Woodward, A. S. 1888 I, p. 310.
1898 B, p. 118.
Zittel, K. A. 1890 A, p. 262.

Portheus ? audax (Leidy).

Leidy, J. 1870 H, p. 12. (Xiphactinus.)
Cope, E. D. 1870 L, p. 533. (Saurocephalus.)
1871 D, pp. 415, 418. (Saurocephalus.)
1872 F, pp. 341, 348. (? Xiphactinus.)
1875 E, p. 276. (Xiphactinus.)
1898 A (1870), p. 29. (X. audax = Saurocephalus thaumas.)
Hay, O. P. 1898 D, p. 27. (Xiphactinus.)
Leidy, J. 1873 B, pp. 290, 348, pl. xvii, figs. 9, 10. (Xiphactinus.)
Stewart, A. 1898 B, p. 115, figures.
1900 A, p. 267, pls. xxxiii-xlvii (in part?).
Cretaceous (Niobrara); Kansas.

Probably identical with one of the other species of *Portheus*, but it may also belong to some other genus.

Portheus brachygnathus (Stewart).

Stewart, A. 1898 B. (Xiphactinus.)
1899 C, p. 107. (Xiphactinus.)
1900 A, p. 293, pl. xlvi, figs. 3, 4. (Xiphactinus.)
Cretaceous (Niobrara); Kansas.

Portheus lestrio Cope.

Cope, E. D. 1873 N, p. 338.
1875 E, pp. 201, 274, pls. xlii, figs. 1-3; xlvii, fig. 1.
Crook, A. R. 1892 A, p. 123.
Hay, O. P. 1898 D, pp. 27, 52. (Xiphactinus.)
Stewart, A. 1898 B, p. 118, footnote. (Xiphactinus.)
Newton, E. T. 1877 A, p. 509.
Cretaceous (Niobrara); Kansas.

Portheus lowii Stewart.

Stewart, A. 1898 A, p. 24, pl. ii, fig. 2.
Hay, O. P. 1898 D, p. 27. (Xiphactinus.)
Stewart, A. 1900 A, p. 293, pl. xlviii, fig. 2. (Xiphactinus.)
Cretaceous (Benton); Kansas.

Portheus molossus Cope.

Cope, E. D. 1871 K, p. 175.
1872 F, pp. 324, 338, 342.
1872 I, pp. 328, 333.
1874 C, p. 39.
1875 E, pp. 50, 183, 273, pls. xxxix, xl, figs. 1-9; xli; xliv, figs 5, 10, 11; xlv, figs. 9-11;
Crook, A. R. 1892 A, pp. 114, 122, pl. xviii.
Hay, O. P. 1898 D, pp. 35, 52, figs. 3, 6, 8. (Xiphactinus.)
Newton, E. T. 1877 A, p. 509.
Stewart, A. 1898 B, p. 116, figs. (Syn. of Xiphactinus audax.)
1900 A, p. 267, part? of pls. xxxiii-xlvii. (Xiphactinus audax.)
Zittel, K. A. 1890 A, p. 263, fig. 268.
Cretaceous (Niobrara); Kansas.

Portheus mudgei Cope.

Cope, E. D. 1874 C, p. 40.
1875 E, pp. 203, 274.
Crook, A. R. 1892 A, p. 123, pl. xxxix.
Hay, O. P. 1898 D, pp. 27, 52. (Xiphactinus.)
Newton, E. T. 1877 A, p. 509.
Cretaceous (Niobrara); Kansas.

Portheus thaumas Cope.

Cope, E. D. 1870 L, p. 533. (Saurocephalus.)
1871 D, pp. 418, 422. (Saurocephalus.)
1872 F, p. 342.
1872 I, pp. 333, 335.
1874 C, p. 40.
1875 E, pp. 196, 273, pl. xliii, figs. 1-4; xliv, figs. 1-4.
Crook, A. R. 1892 A, p. 123.
Hay, O. P. 1898 D, p. 27, figs. 2, 7, 10-12, 15, 16.
Newton, E. T. 1877 A, p. 509. (Xiphactinus.)
Osborn, Scott and Speir 1878 A, p. 99. (Identification doubtful.)
Stewart, A. 1898 B, p. 116, figs. (Syn. of Xiphactinus audax.)
1900 A, p. 267, part? of pls. xxxiii-xlvii. (Xiphactinus audax.)
Cretaceous (Niobrara); Kansas, Colorado?.

ICHTHYODECTES Cope. Type *I. ctenodon* Cope.

Cope, E. D. 1870 L, p. 536.
1871 D, p. 421.
1872, F, pp. 340, 343.
1872, I, pp. 330, 338.
1875 E, pp. 189, 205, 275.
1892 V.
Crook, A. R. 1892 A, p. 111.
Loomis, F. B. 1900 A, p. 236.
Newton, E. T. 1877 A, p. 520.
1878 B.
Nicholson and Lydekker 1889 A, p. 998.
Stewart, A. 1898 C, p. 180.
1899 A, p. 20.
1900 A, p. 205.
Woodward, A. S. 1888 I, p. 311.
Woodward, A. S. 1898 B, p. 118.
Zittel, K. A, 1890 A, p. 263.

Ichthyodectes acanthicus Cope

Cope, E. D. 1877 D, p. 177.
Hay, O. P. 1898 E, p. 227.
Stewart, A. 1900 A, p. 301.
Cretaceous (Niobrara); Kansas.

Ichthyodectes anaides Cope.

Cope, E. D. 1872 I, p. 339.
1872 F, p. 343.
1874 C, p. 40.
1875 E, pp. 206, 274, pl. xliv, figs. 14, 15; pl. xlv, figs. 1-8.

Crook, A. R. 1892 A, pp. 111, 123, pl. xv.
Hay, O. P. 1898 E, p. 226, fig 2.
Loomis, F. B. 1900 A, p. 244.
Stewart, A. 1900 A, p. 296, pl. xlix, figs. 1-3.
Cretaceous (Niobrara); Kansas.

Ichthyodectes cruentus Hay.

Hay, O. P. 1898 E, p. 225, figs. 1, 3, 4.
Stewart, A. 1900 A, p. 300, pl. l, figs. 8-10*b*.
Cretaceous (Niobrara); Kansas.

Ichthyodectes ctenodon Cope.

Cope, E. D. 1870 L, p. 536.
1871 D, p. 421.
1872 F, p. 343.
1872 I, pp. 339, 340, 345.
1874 C, p. 40.
1875 E, pp. 207, 241, 274, pl. xlvi, figs. 1-4.
Crook, A. R. 1892 A, p. 123.
Hay, O. P. 1898 E, p. 226.
Loomis, F. B. 1900 A, p. 244, pl. xxiii, figs. 7, 8.
Stewart, A. 1900 A, p. 303, pl. xlix, figs. 5-7; pl. li, figs. 12, 13.
Cretaceous (Niobrara); Kansas.

Ichthyodectes goodeanus Cope.

Cope, E. D. 1877 D, p. 176.
Hay, O. P. 1898 A, p. 227.
Cretaceous (Niobrara); Kansas.

Ichthyodectes hamatus Cope.

Cope, E. D. 1872 I, pp. 339, 340.
1872 F, p. 343.
Cope, E. D. 1874 C, p. 40.
1875 E, pp. 209, 274, pl. xlvi, fig. 5.
Crook, A. R. 1892 A, p. 123.
Hay, O. P. 1898 E, pp. 225, 226.
Loomis, F. B. 1900 A, p. 243, pl. xxiii, figs. 9*a*, 9*b*.
Stewart, A. 1900 A, p. 298, pl. xlviii, fig. 2; pl. l, figs. 1-7.
Cretaceous (Niobrara); Kansas.

Ichthyodectes multidentatus Cope.

Cope, E. D. 1872 I, pp. 339, 342.
1872 F, p. 343.
1874 C, p. 41.
1875 E, pp. 212, 275, pl. l, figs. 6, 7
Crook, A. R. 1892 A, p. 123.
Hay, O. P. 1898 E, p. 227.
Loomis, F. B. 1900 A, p. 243.
Cretaceous (Niobrara); Kansas.

Ichthyodectes parvus Stewart.

Stewart, A. 1900 A, p. 302, pl. li, figs. 1-11 (I. acanthicus, not of Cope); p. 302 (I. parvus).
Cretaceous (Niobrara); Kansas.

Ichthyodectes prognathus Cope.

Cope, E. D. 1870 L, p. 532. (Saurocephalus.)
1871 D, p. 417. (Saurocephalus.)
1872 F, pp. 340, 343.
1872 I, p. 340.
1874 C, p. 41.
1875 E, pp. 210, 274, pl. xlvi, figs. 6-10.
Crook, A. R. 1892 A, p. 123.
Hay, O. P. 1898 E, p. 226.
Cretaceous (Niobrara); Kansas.

SAUROCEPHALINÆ.

Stewart, A. 1899 C, p. 107. (Saurodontidæ.)
Stewart, A. 1900 A, p. 310. (Saurodontidæ.)

SAUROCEPHALUS Harlan. Type *S. lanciformis* Harlan, not of Agassiz.

Harlan, R. 1824 A.
Agassiz, L. 1843 B (1844), v, p. 101. (In part.)
Cope, E. D. 1870 L, pp. 529, 530.
1870 P.
1871 A.
1871 D, p. 415.
1872 F, pp. 340, 343.
1872 I, pp. 330, 342.
1873 N, p. 339. (Daptinus, with *S. phlebotomus* as type.)
1875 E, pp. 189, 215, 275. (Saurodon.)
1888 V. (Saurodon.)
1892 V. (Saurodon.)
1898 A.
Crook, A. R. 1892 A, p. 120.
Davies, W. 1878 A.
Giebel, C. G. 1848 A, p. 88.
Harlan, R. 1834 B, p. 85. (Saurodon.)
1835 B, p. 286.
1835 B, p. 288. (Saurodon.)
1835 H.
Hay, O. P. 1899 B, p. 302.
Hays, I. 1830 A. (Saurodon, with *S. leanus* as type.)
Kramberger, D, 1881 A.
Leidy, J. 1856 O, p. 302.
Leidy, J. 1857 I, p. 95.
Loomis, F. B. 1900 A, p. 247 (Saurodon); p. 249 (Saurocephalus).
Newton, E. T. 1878 A.
1878 B. (Daptinus.)
Nicholson and Lydekker 1889 A, p. 998 (Saurocephalus); p. 999 (Saurodon).
Owen, R. 1845 B, p. 130.
Pictet, F. J. 1854 A, p. 93 (Saurocephalus); p. 94 (Saurodon).
Stewart, A. 1898, A, p. 22. (Saurodon, Daptinus, Saurocephalus.)
1898 C. (Saurodon, Saurocephalus.)
1900 A, p. 311 (Saurodon); p. 323 (Saurocephalus).
Woodward, A. S. 1888 I, p. 312. (Daptinus.)
Zittel, K. A. 1890 A, p. 264.

Saurocephalus arapahovius Cope.

Cope, E. D. 1872 I, p. 343.
1872 F, pp. 344, 348.
1874 C, p. 41.
1875 E, pp. 216, 275; pl. xlix, fig. 5.
Loomis, F. B. 1900 A, p. 251. (S. arapalovius, syn. of S. lanciformis.)

Newton, E. T. 1878 A.
Stewart, A. 1898 C, p. 186.
1900 A, p. 323.
Cretaceous (Niobrara); Kansas.

Saurocephalus broadheadi (Stewart.)

Stewart, A. 1898 A, p. 24, pl. ii, figs. 1a–1c. (Daptinus.)
Loomis, F. B. 1900 A, p. 252, pl. xxiv, fig. 6; pl. xxv, fig. 1.
Stewart, A. 1898 C, p. 186. (Saurodon.)
1900 A, p. 313, pl. xlviii, figs. 1a–1c.
Cretaceous (Niobrara); Kansas.

Saurocephalus dentatus Stewart.

Stewart, A. 1898 A, p. 25, pl. i, figs. 3a, 3b.
Loomis, F. B. 1900 A, p. 251. (Syn. of S. lanciformis.)
Stewart, A, 1898 C, p. 186.
1900 A, p. 323, pl. lviii, figs. 3, 4.
Cretaceous (Niobrara); Kansas.

Saurocephalus ferox (Stewart).

Stewart, A. 1898 C, p. 183, pl. xv; pl. xvi, figs. 1–3. (Saurodon.)
1900 A, p. 319, pls. lvi, lvii. (Saurodon.)
Cretaceous (Niobrara); Kansas.

Saurocephalus lanciformis Harlan.

Harlan, R. 1824 A, pl. xii. (Not of Agassiz, L. 1844 A.)
Cope, E. D. 1870 L, p. 530.
1871 D, p. 415.
1875 E, pp. 216, 275.
Davies, W. 1878 A, p. 260.
Giebel, C. G. 1848 A, p. 89.
Harlan, R. 1834 B, p. 83.
1835 B, pp. 286, 289.
1835 H.
Hay, O. P. 1899 B, p. 299, figs. 1–4.
Hays, I. 1830 A, p. 477, pl. xvi, fig. 11.
Hilgard, E. W. 1860 A, pp. 142, 389.
Leidy, J. 1856 O, p. 302.
1857 I, pl. vi, figs. 8–11.
Loomis, F. B. 1900 A, p. 251, pl. xxv, figs. 2–5.
Morton, S. G. 1835 A, p. 277.
Newton, E. T. 1878 A.
Owen, R. 1845 B, p. 130, pl. lv.
Pictet, F. J. 1854 A, p. 93.
Stewart, A. 1898 C, p. 186.
Cretaceous (Niobrara); Nebraska, Kansas.

Saurocephalus leanus (Hays).

Hays, I. 1830 A, p. 477, pl. xvi, figs. 1–10. (Saurodon.)
Agassiz, L. 1844 A, p. 205. (Cimolichthys levisiensis, in part.)
Cope, E. D. 1870 L, p. 531. (Saurodon.)
1871 D, p. 421. (Saurodon.)
1875 E, p. 275. (Saurodon.)
Davies, W. 1878 A, p. 260.
Giebel, C. G. 1848 A, p. 89. (Saurodon.)
Harlan, R. 1834 B, p. 83.
1835 B, p. 287 (S. leanus); p. 288 ("S. leæ").
Leidy, J. 1856 O, p. 302.
1857 I, pl. vi, figs. 12–15.
Morton, S. G. 1835 A, p. 277.
Newton, E. T. 1878 A.
Woodward, A. S. 1888 B.
Zittel, K. A. 1890 A, p. 264.
Cretaceous; New Jersey.

Saurocephalus pamphagus Hay.

Hay, O. P. 1899 B, p. 303, fig. 5.
Cretaceous (Niobrara); Kansas.

Saurocephalus phlebotomus Cope.

Cope, E. D. 1870 L, p. 530.
1871 D, p. 416.
1872 I, p. 343. (Saurodon.)
1873 N, p. 339. (Daptinus.)
1874 C, p. 41. (Daptinus.)
1875 E, pp. 213, 275, pl. xlvii, figs. 3, 4, 6; pl. xlix, figs. 1–4. (Daptinus.)
1877 G, p. 588. (Saurodon.)
1888 V.
1892 V.
Crook, A. R. 1892 A, pp. 120, 123.
Loomis, F. B. 1900 A, p. 248, pl. xxiv, figs. 1–5. (Saurodon,)
Newton, E. T. 1878 B.
Stewart, A. 1898 C, p. 186. (Saurodon.)
1900 A, p. 312, pl. lvii, figs. 4, 5. (Saurodon.)
Zittel, K. A. 1890 A, p. 264. (Daptinus.)
Cretaceous (Niobrara); Kansas.

Saurocephalus pygmæus (Loomis).

Loomis, F. B. 1900 A, p. 248, pl. xxiii, fig. 10. (Saurodon.)
Cretaceous (Niobrara); Kansas.

Saurocephalus xiphirostris (Stewart).

Stewart, A. 1898 C, p. 179, pl. xiv. (Saurodon.)
1900 A, p. 314, pl. lv. (Saurodon).
Cretaceous (Niobrara); Kansas.

GILLICUS Hay. Type *Ichthyodectes arcuatus* Cope.

Hay, O. P. 1898 E, p. 230.
Loomis, F. B. 1900 A, p. 237. (Syn. of Ichthyodectes.)
Stewart, A. 1900 A, p. 304.

Gillicus arcuatus (Cope).

Cope, E. D. 1875 E, pp. 193, 201, 274, pl. xlvii, figs. 7–9. (Portheus; the figures probably not belonging to this species.)
1877 D, p. 177. (Ichthyodectes.)
1892 V, p. 942.
Crook, A. R. 1892 A, p. 112, pl. xvi (I. polymicrodus); p. 123 (Portheus).
Hay, O. P. 1898 D, pp. 30, 42. (I. arcuatus, I. polymicrodus.)
1898 E, pp. 228, 230. (G. arcuatus, G. polymicrodus.)
Loomis, F. B. 1900 A, p. 242, pl. xxiii, figs. 1–6, text fig. 7. (Ichthyodectes occidentalis.)
Newton, E. T. 1877 A, p. 509.
Stewart, A., p. 307, pls. lii–liv.
Cretaceous (Niobrara); Kansas.

STRATODONTIDÆ.

Cope, E. D. 1872 I, p. 348.
1872 F, p. 345.
1872 I, p. 343. (Pachyrhizodontidæ, part.)
1875 E, p. 218.
Crook, A. J. 1892 A, p. 109.
Nicholson and Lydekker 1889 A, p. 998. (Pachyrhizodontidæ, part.)
Reis, O. M. 1895 C, p. 170.
Stewart, A 1900 A, p. 326.
Zittel, K. A. 1890 A, p. 268.

STRATODUS Cope. Type *S. apicalis* Cope.

Cope, E. D. 1872 I, p, 348.
1872 F, pp. 345, 346.
1875 E, pp. 219, 226.
Reis, O. M. 1895 C, p. 170.
Stewart, A. 1900 A, p. 327.
Woodward, A. S. 1888 I, p. 314.
Zittel, K. A. 1890 A, p. 269.

Stratodus apicalis Cope.

Cope, E. D. 1872 I, p. 349.
Cope, E. D. 1872 F, pp. 346, 348.
1874 C, p. 47.
1875 E, pp. 227, 279, pl. xlix, figs. 6–8.
Stewart, A. 1900 A, p. 328, pl. lx; pl. lxi, fig. 1.
Cretaceous (Niobrara); Kansas.

Stratodus oxypogon Cope.

Cope, E. D. 1877 D, p. 180.
Cretaceous (Niobrara); Kansas.

EMPO Cope. Type *E. nepaholica* Cope.

Cope, E. D. 1872 I, p. 347.
1872 F, p. 345.
1872 I, p. 348. (Cimolichthys.)
1874 C, p. 45.
1875 E, pp. 219, 228, 279.
Loomis, F. B. 1900 A, p. 267. (Syn. of Cimolichthys.)
Nicholson and Lydekker 1889 A, p. 999.
Stewart, A, 1900 A, p. 330.
Zittel, K. A. 1890 A, p. 268.

Empo contracta Cope.

Cope, E. D. 1874 C, p. 46.
1875 E, pp. 232, 279, pl. liii, figs. 14–17.
Loomis, F. B. 1900 A, p. 273, pl. xxvii, figs. 8, 9. (Cimolichthys.)
Stewart, A. 1900 A, p. 339.
Cretaceous (Niobrara); Kansas.

Empo lisbonensis Stewart.

Stewart, A. 1899 C, p. 111.
Loomis, F. B. 1900 A, p. 222. (Syn. of E. merrillii.)
Stewart, A. 1900 A, p. 337, pl. lxi, figs. 10*a*, 10*b*.
Cretaceous (Pierre); Kansas.

Empo merrillii Cope.

Cope, E. D. 1874 C, p. 46.
Cope, E. D. 1875 E, pp. 232, 279, pl. liii, figs. 10–13.
Loomis, F. B. 1900 A, p. 271, pl. xxvii, fig. 7. (Cimolichthys.)
Cretaceous (Niobrara); Kansas.

Empo nepaholica Cope.

Cope, E. D. 1872 I, p. 347.
1872 F, p. 345.
1872 I, p. 351. (Cimolichthys sulcata.)
1874 C, p. 46. (E. sulcata, E. nepæolica.)
1875 E, pp. 230, 279, pls. xlix, fig. 9; pl. l, fig. 8; lii, fig. 1; liii, figs. 3–5. (E. nepæolica.)
Loomis, F. B. 1900 A, p. 271, pl. xxvii, figs. 1–3. (Cimolichthys nepæolica)
Stewart, A. 1900 A, p. 332. (E. nepæolica.)
Cretaceous (Niobrara); Kansas.

Empo semianceps Cope.

Cope, E. D. 1872 I, p. 351. (Cimolichthys.)
1872 F, p. 326. (Cimolichthys.)
1874 C, p. 46.
1875 E, pp. 233, 279, pl. liii, figs. 1, 2, 6–9.
Loomis, F. B. 1900 A, p. 273, pl. xxvii, figs. 4–6. (Cimolichthys.)
Stewart, A. 1900 A, p. 338, pl. lxi, figs. 6–9.
Cretaceous (Niobrara); Kansas.

PACHYRHIZODONTIDÆ.

Cope, E. D. 1872 I, p. 343.
1872 F, p. 344.
Loomis, F. B. 1900 A, p. 258. (Salmonidæ, part.)
Nicholson and Lydekker 1889 A, p. 998.
Stewart, A. 1900 A, p. 349. (Salmonidæ, part.)

PACHYRHIZODUS Agassiz. Type *A. basalis* Agassiz.

Agassiz, L., 1850, Dixon's Geol. Sussex, p. 374.
Cope, E. D. 1872 F, p. 344.
1872 I, p. 344.
1875 E, pp. 219, 220, 276.
1887 D, p. 177.
Loomis, F. B. 1900 A, p. 258.
Nicholson and Lydekker 1889 A, p. 999.
Pictet, F. J. 1854 A, p. 94.
Reis, O. M. 1895 C, p, 170.
Stewart, A. 1900 A, p. 349.
Woodward, A. S. 1888 I, p. 313.
Zittel, K. A. 1890 A, p. 268.

Pachyrhizodus caninus Cope.

Cope, E. D. 1872 I, p. 344.
1872 F, p. 348.

Cope, E. D. 1874 C, p. 42.
1875 E, pp. 221, 276, pl. l, figs. 1–4.
Crook, A. J. 1892 A, p. 109.
Loomis, F. B. 1900 A, p. 262, pl. xxvii, figs. 10–12.
Stewart, A. 1900 A, p. 355, pl. lxx, figs. 3–6.
Cretaceous (Niobrara); Kansas.

Pachyrhizodus curvatus Loomis.

Loomis, F. B. 1900 A, p. 264 (P. recurvatus); p. 265, pl. xxv, figs. 6–8 (P. curvatus).
Cretaceous (Niobrara); Kansas.

Pachyrhizodus kingii Cope.

Cope, E. D. 1872 I, p. 346.
1872 F, p. 348.
1874 C, p. 42.
1875 E, pp. 223, 276, pl. xlvi, fig. 11.
Loomis, F. B. 1900 A, p. 263. (Syn. of P. latimentum.)
Cretaceous (Niobrara); Kansas.

Pachyrhizodus latimentum Cope.

Cope, E. D. 1872 I, p. 346.
1872 F, p. 348.
1874 C, p. 42.
1875 E, pp. 223, 276, pl. l, fig. 5; pl. li, figs. 1–7.
Loomis, F. B. 1900 A, p. 263, pl. xxvi, figs. 7, 8.
Stewart, A. 1900 A, p. 357, pl. lxviii; pl. lxx, figs. 9, 10.
Cretaceous (Niobrara); Kansas.

Pachyrhizodus leptognathus Stewart.

Stewart, A. 1898 D, p. 193, pl. xvii, fig. 1.
Loomis, F. B. 1900 A, p. 264, pl. xxvi, figs. 10–16.
Stewart, A. 1900 A, p. 351, pl. lxix, fig. 1.
Cretaceous (Niobrara); Kansas.

Pachyrhizodus leptopsis Cope.

Cope, E. D. 1874 C, p. 42.
1875 E, pp. 225, 276, pl. li, figs. 8–8c.
Loomis, F. B. 1900 A, p. 264. (P. lepitopsis.)
Stewart, A. 1900 A, p. 354, pl. lxx, fig. 1.
Cretaceous (Niobrara); Kansas.

Pachyrhizodus minimus Stewart.

Stewart, A. 1899 B, p. 37, figure.
1900 A, p. 361, text fig. 1.
Cretaceous (Niobrara); Kansas.

Pachyrhizodus velox Stewart.

Stewart, A. 1898 D, p. 193, pl. xvii, fig. 2.
Loomis, F. B. 1900 A, p. 265. (P. ferox.)
Stewart, A. 1900 A, p. 353, pl. xlix, fig. 9.
Cretaceous (Niobrara); Kansas.

CONOSAURUS Gibbes. Type *C. bowmani* Gibbes.

Gibbes, R. W. 1851 A, p. 9.
Cope, E. D. 1872 F, p. 345.
1875 E, p. 276.
Leidy, J. 1868 G, p. 202. (Conosaurops, to replace Conosaurus.)
Loomis, F. B. 1900 A, p. 261.
Zittel, K. A. 1890 A, p. 268. (Syn. of Pachyrhizodus.)

Conosaurus bowmani Gibbes.

Gibbes, R. W. 1851 A, p. 10, pl. iii, figs. 1–5.
Cope, E. D. 1875 E, p. 276.
Gibbes, R. W. 1850 A. (Name only.)
Leidy, J. 1868 G, p. 202. (Conosaurops.)
Cretaceous (Greensand); New Jersey.

ORICARDINUS Cope. Type *O. tortus* Cope.

Cope, E. D. 1877 D, p. 177.

Oricardinus sheareri Cope.

Cope, E. D. 1872 I, p. 347. (Pachyrhizodus.)
1872 F, p. 348. (Pachyrhizodus.)
1874 C, p. 43. (Pachyrhizodus.)
1875 E, pp. 225, 276. (Pachyrhizodus.)
1877 D, p. 177. (Oricardinus.)
Loomis, F. B. 1900 A, p. 264. (Pachyrhizodus sheari.)
Cretaceous (Niobrara); Kansas.

Oricardinus tortus Cope.

Cope, E. D. 1877 D, p. 177.
Cretaceous (Niobrara); Kansas.

ENCHODONTIDÆ.

Loomis, F. B. 1900 A, p. 267. (Enchodidæ.)
Nicholson and Lydekker 1889 A, p. 997.
Stewart, A. 1900 A, p. 378.

ENCHODUS Agassiz. Types *E. faujasi* and *E. halocyon*.

Agassiz, L. 1843 B (1844), v, p. 64.
1844 A.
Cope, E. D. 1872 F, p. 347.
1872 I, p. 354.
1875 E, pp. 219, 238, 301 (Enchodus); pp. 219, 235, 277 (Phasganodus).
Dames, W. 1887 B, p. 71.
Davis, J. W. 1887 C, p. 521.
Dollo, L. 1892 B, p. 183.
Günther, A. 1880 A, p. 433.
Heckel, J. J. 1843 A, p. 240. (Isodus.)
Leidy, J. 1873 B, p. 289.
Loomis, F. B. 1900 A, p. 273.
Nicholson and Lydekker 1889 A, p. 998.
Pictet, F. J. 1854 A, p. 81.
Woodward, A. S. 1888 I, p. 315.
1889 A.
Zittel, K. A. 1890 A, p. 269.

Enchodus amicrodus Stewart.

Stewart, A. 1898 D, p. 193, text-fig. 3.
Loomis, F. B. 1900 A, p. 280.
Stewart, A. 1900 A, p. 379, text fig. p. 378.
Cretaceous (Niobrara); Kansas.

Enchodus anceps Cope.

Cope, E. D. 1872 I, p. 352. (Cimolichthys.)
1874 C, p. 44. (Enchodus?)
1875 E, pp. 236, 277 (Phasganodus); p. 301 (Enchodus).
Loomis, F. B. 1900 A, p. 277.
Cretaceous (Niobrara); Kansas.

Enchodus calliodon Cope.

Cope, E. D. 1872 I, p. 354.
1872 F, pp. 347, 348.
1874 C, p. 44.
1875 E, pp. 240, 278, 301.
Loomis, F. B. 1900 A, p. 277.
Cretaceous (Niobrara); Kansas.

Enchodus carinatus (Cope).

Cope, E. D. 1869 F, p. 241. (Sphyræna.)
1871 D, p. 424. (Sphyræna.)
1872 F, p. 347. (Cimolichthys.)
1875 E, pp. 80, 235, 277. (Phasganodus.)
Loomis, F. B. 1900 A, p. 277.
Cretaceous (Niobrara); Kansas.

Enchodus dolichus Cope.

Cope, E. D. 1875 E, pp. 239, 278, 300, pl. liv, figs. 8, 8*a*.
1885 Z, p. 3.
Loomis, F. B. 1900 A, p. 279, pl. xxvii, figs. 16, 17.
Stewart, A. 1900 A, p. 377, pl. lxx, fig. 12.
Cretaceous (Niobrara); Kansas.

Enchodus ferox Leidy.

Leidy, J. 1855 C, p. 397.
Cope, E. D. 1875 E, p. 277.
Emmons, E. 1860 A, p. 214, fig. 182^4.
Loomis, F. B. 1900 A, p. 277.
Morton, S. G. 1834 A, p. 32, pl. xii, fig. 1. ("Sphyræna.")
Cretaceous; New Jersey.

Enchodus gentryi (Cope).

Cope, E. D. 1875 H, p. 362. (Phasganodus.)
Miocene; New Jersey.

Enchodus gladiolus Cope.

Cope, E. D. 1872 I, p. 353. (Cimolichthys.)
1874 C, p. 43. (Phasganodus?.)
1875 E, pp. 235, 277 (Phasganodus); 301, pl. xlii, fig. 7 (Enchodus).
Cretaceous (Niobrara); Kansas.

Enchodus oxytomus Cope.

Cope, E. D. 1875 E, p. 278.
Loomis, F. B. 1900 A, p. 277.
Cretaceous; New Jersey.

Enchodus parvus Stewart.

Stewart, A. 1898 D, p. 192, text fig. 2.
Loomis, F. B. 1900 A, p. 280. (Syn. of E. shumardii.)
Stewart, A. 1900 A, p. 378, text fig.
Cretaceous (Niobrara); Kansas.

Enchodus petrosus Cope.

Cope, E. D. 1874 C, p. 44.
1875 E, pp. 239, 278, pl. liv, figs. 4-6.
Loomis, F. B. 1900 A, p. 278, pl. xxvii, figs. 13-15.
Stewart, A. 1900 A, p. 376, pl. lxx, fig. 11.
Cretaceous (Niobrara) Kansas.

Enchodus pressidens Cope.

Cope, E. D. 1869 F, p. 241.
1875 E, p. 277.
Loomis, F. B. 1900 A, p. 277.
Cretaceous; New Jersey.

Enchodus semistriatus Marsh.

Marsh, O. C. 1870 E, p. 230.
Cope, E. D. 1875 E, p. 277. (Phasganodus.)
Loomis, F. B. 1900 A, p. 277.
Cretaceous; New Jersey.)

Enchodus shumardii Leidy.

Leidy, J. H. 1856 M, p. 257.
Cope, E. D. 1874 C, p. 44.
1875 E, p. 279.
Leidy, J. 1873 B, pp. 289, 347, pl. xvii, fig. 20.
Loomis, F. B. 1900 A, p. 280, pl. xxvii, figs. 18, 19.
Stewart, A. 1900 A, p. 375.
Whiteaves, J. F. 1889 B, p. 194, pl. xxvi, figs. 7 *a*, *b*, *c*.
Cretaceous; Dakota, Manitoba.

Enchodus tetræcus Cope.[1]

Cope, E. D. 1875 E, p. 278.
Loomis, F. B. 1900 A, p. 277 (E. tetracus).
Stewart A. 1900 A, p. 375. (E. tetracus.)
Cretaceous; Delaware, New Jersey.

Enchodus sp. indet.

Cope, E. D. 1871 D, p. 424.
Cretaceous (Niobrara); Kansas.

TETHEODUS Cope. Type *T. pephredo* Cope.

Cope, E. D. 1874 C, p. 43.
1875 E, pp. 219, 237, 277.
Loomis, F. B. 1900 A, p. 278. (Syn. of Enchodus.)
Zittel, K. A. 1890 A, p. 270.

Tetheodus pephredo Cope.

Cope, E. D. 1874 C, p. 43.
Cope, E. D. 1875 E, pp. 237, 277, pl. liv, figs. 1-3.
Loomis, F. B. 1900 A, p. 278. (T. pephero; syn. of Enchodus petrosus.)
Cretaceous (Niobrara); Kansas.

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[1] Agassiz (1843 B (1844), v, p. 65, pl. xxv *c*, figs. 1, 2; pl. xxxiii, figs. 2-4) reports *E. halocyon* from Cretaceous of Maryland. Its original locality is Europe. The determination was probably erroneous.

CIMOLICHTHYS Leidy. Type *C. lewesiensis* Leidy.

Leidy, J. 1856 O, p. 302.
Agassiz, L. 1843 B, v, pt. i, p. 102. (Saurocephalus, Saurodon, not of Harlan and Hays.)
Cope, E. D. 1870 L, p. 530.
  1871 D, p. 415.
  1872 F, p. 346.
  1875 E, pp. 219, 235, 277, 300. (Phasganodus, in part.)
Dames, W. 1887 A. (Phasganodus=Saurodon Agassiz.)
Dixon, F. 1878 A, p. 411.
Leidy, J. 1857 F, p. 167. (Phasganodus, type *P. dirus.*)
  1873 B, p. 347. (Phasganodus.)
Loomis, F. B. 1900 A, p. 267.
Woodward, A. S. 1888 I, p. 316.
Zittel, K. A. 1890 A, p. 269 (Cimolichthys); p. 270 (Phasganodus).

Cimolichthys dirus (Leidy.)

Leidy, J. 1857 F, p. 167. (Phasganodus.)
Cope, E. D. 1874 C, p. 43. (Phasganodus.)
  1875 E, p. 277. (Phasganodus.)
Dames, W. 1887 A, p. 74. (Saurodon.)
Leidy, J. 1873 B, pp. 289, 347, pl. xvii, figs. 23, 24. (Phasganodus.)
Stewart, A. 1900 A, p. 376, pl. lxx, fig. 14. (Enchodus.)
  Cretaceous (Fox Hills); North Dakota.

ALBULIDÆ.

Günther, A. 1868 A, pp. 468, 469. (Albulina.)
Jordan and Evermann 1896 A, p. 410.
Loomis, F. B. 1900 A, p. 252.

SYNTEGMODUS Loomis. Type *S. altus* Loomis.

Loomis, F. B. 1900 A, p. 252.

Syntegmodus altus Loomis.

Loomis, F. B. 1900 A, p. 253, pl. xxii, fig. 9.
  Cretaceous (Niobrara); Kansas.

APSOPELIX Cope. Type *A. sauriformis* Cope.

Cope, E. D. 1871 D, p. 423.
  1875 E, p. 241.
Zittel, K. A. 1890 A, p. 312.
  A genus of uncertain position.

Apsopelix sauriformis Cope.

Cope, E. D. 1871 D, p. 424.
  1874 C, p. 47.
  1875 E, pp. 242, 279, pl. xlii, fig. 6.
  Cretaceous (Benton); Kansas.

CYCLOTOMODON Cope. Type *C. vagrans* Cope.

Cope, E. D. 1876 F, p. 113.
  Systematic position doubtful.

Cyclotomodon vagrans Cope.

Cope, E. D. 1876 F, p. 113.
  Phosphate deposit; South Carolina.

CLUPEIDÆ.

Agassiz, L. 1843 B (1844), v, p. 96. ("Halécoides," in part.)
  1845 A, p. 292.
Bridge, T. W. 1896 A, p. 557.
Brühl, B. C. 1847 A. ("Clupeen.")
Cope, E. D. 1872 C, p. 333.
  1884 O, p. 67.
Dareste, C. 1872 A, p. 1087.
Grassi, B. 1883 A.
Günther, A. 1868 A, p. 381.
  1880 A, p. 655.
  1881 A, p. 693.
Hitchcock, Fanny R. 1888 B.
Jordan, D. S. 1891 A.
Jordan and Evermann 1896 A, p. 417.
Klein, E. F. 1879 A, p. 106.
Klein, E. F. 1886 A.
Kölliker, A. 1859 A. (Clupeinæ.)
Marck, W. 1863 A, p. 41. (Clupeoidei.)
Müller, J. 1846 C, p. 790.
Nicholson and Lydekker 1889 A, p. 994.
Owen, R. 1845 B, p. 135.
  1866 A, p. 10, *et seq.*
Parker, W. K. 1868 A, p. 56.
Quenstedt, F. A. 1885 A, p. 367. (Clupacei.)
Stannius, H. 1846 A. ("Clupeiden.")
  1854 A.
Steinmann and Döderlein 1890 A, p. 579.
Stephan, P. 1900 A. ("Clupéidés.")
Vaillant, L. 1883 A.
Vrolik, A. J. 1873 A, p. 267.
Zittel, K. A. 1890 A, p. 271.

DIPLOMYSTUS Cope. Type *D. dentatus* Cope.

Cope, E. D. 1877 I, p. 808.

A few references are here included to the literature of the genus *Clupea*, which is closely related to *Diplomystus* and to which most of the species of the latter were originally assigned.

Agassiz L. 1843 B (1844), v, p. 115. (Clupea.)
Cope, E. D. 1884 O, p. 73.
1885 Z, p. 4.
Günther, A. 1868 A, p. 412. (Clupea.)
Jordan and Evermann 1896 A, p. 421. (Clupea.)
Müller, J. 1843 A, p. 216.
Nicholson and Lydekker 1889 A, p. 996.
Pictet, F. J. 1854 A, p. 113. (Clupea.)
Quenstedt, F. A. 1885 A, p. 367. (Clupea.)
Reis, O. M. 1895 C, p. 167. (Clupea.)
Woodward, A. S. 1895 C, p. 1.
Zittel, K. A. 1890 A, p. 276. (Clupea, Diplomystus.)

Diplomystus altus (Leidy).

Leidy, J. 1873 B, pp. 196, 347, pl. xvii, fig. 2. (Clupea.)
Cope, E. D. 1877 I, p. 811.
1877 Z, p. 570.
1877 AA.
1884 O, p. 79.
King, C. 1878 A, p. 394. (Clupea.)
Eocene (Green River); Wyoming.

Diplomystus analis Cope.

Cope, E. D. 1877 I, p. 809.
1877 Z, p. 570.
1877 AA.
1884 O, p. 75, pl. vii, fig. 4; pl. viii, fig. 3; pl. x, fig. 2.
Eocene (Green River); Wyoming.

Diplomystus dentatus Cope.

Cope, E. D. 1877 I, p. 808.
1877 Z, p. 570.
1877 AA.
1884 O, p. 74, pl. x, fig. 1.
Eocene (Green River); Wyoming.

Diplomystus humilis (Leidy).

Leidy, J. 1856 M, p. 256. (Clupea.)
Cope, E. D. 1870 H, p. 382. (Clupea pusilla, C. humilis.)
1871 E, p. 429. (Clupea pusilla, C. humilis.)
1877 I, p. 811.
1877 Z, p. 570.
1877 AA.
1884 O, p. 77, pl. ix, fig. 8; pl. x, fig. 4.
King, C. 1878 A, p. 394. (Clupea humilis, C. pusilla.)
Leidy, J. 1871 C, p. 369. (Clupea humilis, C. pusilla.)
1872 B, pp. 353, 372. (Clupea.)
1873 B, pp. 195, 347, pl. xvii, fig. 1. (Clupea.)
Eocene (Green River); Wyoming.

Diplomystus pectorosus Cope.

Cope, E. D. 1877 I, p. 810.
1877 Z, p. 570.
1877 AA.
1884 O, p. 76, pl. x, fig. 3.
Eocene (Green River); Wyoming.

Diplomystus theta Cope.

Cope, E. D. 1874 D, p. 51. (Clupea.)
1874 B, p. 461. (Clupea.)
1877 Z, p. 570.
1884 O, p. 77.
Eocene (Green River); Wyoming.

SPANIODON Pictet. Type *S. blondellii* Pictet.

Pictet, F. J., 1850, Poiss. foss. du Liban, p. 34.
Cope, E. D. 1878 F, p. 69.
1878 H H, p. 57.
Davis, J. W. 1887 C, p. 567.
Pictet, F. J. 1854 A, p. 115.
Zittel, K. A. 1890 A, p. 274.

Spaniodon simus Cope.

Cope, E. D. 1878 F, p. 69.
Cretaceous (Niobrara); S. Dakota.

SARDINIUS Marck. Type *Osmerus cordieri* Agassiz.

Marck, W., 1858, Zeitschr. deutsch. geol. Gesellsch., x, p. 245.
Cope, E. D. 1878 A, p. 70.
Davis, J. W. 1887 C, p. 567.
Marck, W. 1863 A, p. 43.
Zittel, K. A. 1890 A, p. 275.

Sardinius? blackburnii Cope.

Cope, E. D. 1891 H, p. 654.
1892 B.
Oligocene?; S. Dakota.

Sardinius lineatus Cope.

Cope, E. D. 1878 F, p. 71.
Cretaceous (Niobrara); S. Dakota.

Sardinius nasutulus Cope.

Cope, E. D. 1878 F, p. 70.
Cretaceous (Niobrara); S. Dakota.

Sardinius percrassus Cope.

Cope, E. D. 1878 F, p. 72.
Cretaceous (Niobrara); S. Dakota.

SALMONIDÆ.

Agassiz, L. 1843 B (1844), v, p. 96. (Halécoides, in part.)
1845 A, p. 306.
Bridge, T. W. 1896 A, p. 550.
Bruch, 1862, Osteol. Rheinlachs.
Brühl, B. C. 1847 A.
Cope, E. D. 1872 C, p. 333.
Dareste, C. 1872 A, p. 1175.
Gill, T. 1894 C, p. 117.
Grassi, B. 1883 A.
Günther, A. 1866 A, p. 1.
1880 A, p. 630.
1881 A, p. 693.
Jordan and Evermann 1896 A, p. 460 (Salmonidæ); p. 519 (Argentinidæ).
Klein, E. F. 1879 A, p. 107.
Kölliker, A. 1859 A. (Salmonea.)
Müller, J. 1843 A, p. 214. (Salmones.)
Nicholson and Lydekker 1889 A, p. 994.
Owen, R. 1845 B, p. 141. ("Salmonoids.")
1866 A.
Parker, W. K. 1868 A, p. 55.
1874 A.
Quenstedt, F. A. 1885 A, p. 365. (Salmonei.)
Reis, O. M. 1895 C, p. 170.
Stannius, H. 1854 A. (Salmones.)
Stephan, P. 1900 A. (Salmones.)
Ussow. S. 1900 A. ("Salmoniden.")
Vaillant, L. 1883 A.
Vrolik, A. J. 1873 A, p. 248.
Zittel, K. A. 1890 A, p. 279.

RHABDOFARIO Cope. Type *R. lacustris* Cope.

Cope, E. D. 1870 M, p. 545.
Zittel, K. A. 1890 A, p. 280.

Rhabdofario lacustris Cope.

Cope, E. D. 1870 M, p. 546.
Pleistocene; Idaho.

LEPTICHTHYS Stewart. Type *L. agilis* Stewart.

Stewart, A. 1899 E, p. 78.
1900 A, p. 372.

Leptichthys agilis Stewart.

Stewart, A. 1899 E, p. 78.
1900 A, p. 372, pl. lxxii, fig. 1.
Cretaceous; Kansas.

MALLOTUS Cuvier. Type *M. villosus* (Müller).

Cuvier, G., 1829, Règne Anim., ed. ii, vol. ii, p. 305.
Agassiz, L. 1843 B (1844), v., p. 98.
Günther, A. 1866 A, p. 170.
1880 A, p. 647.
Jordan and Evermann 1896 A, p. 520.
Zittel, K. A. 1890 A, p. 280.

Mallotus villosus (Müller).

Müller, 1877, Prod. Zool. Dan., p. 245. (Clupea.)
Agassiz, L. 1843 B (1844), v., p. 98, pl. lx.
Dawson, J. W. 1877 B, p. 341.
1890 A, p. 86.
Günther, A. 1866 A, p. 170.
Jordan and Evermann 1896 A, p. 521.
Logan, W. E. 1863 A, p. 916, fig. 494.
Quenstedt, F. A. 1885 A, p. 366.
Woodward, A. S. 1889 E, p. 230.
Zittel, K. A. 1890 A, p. 280, fig. 290.
Living in northern seas: Pleistocene; Canada.

GONORHYNCHIDÆ.

Cope, E. D. 1872 C, p. 333.
Gill, T. 1872 C, p. 16.
Günther, A. 1868 A, p. 373.
1880 A, p. 652.
Günther, A. 1881 B, p. 693.
Nicholson and Lydekker 1889 A, p. 999.
Woodward, A. S. 1896 B.
Zittel, K. A. 1890 A, p. 285. (Ganorhynchidæ.)

NOTOGONEUS Cope. Type *N. osculus* Cope.

Cope, E. D. 1885 Y, p. 1091.
1886 T, p. 163.
Nicholson and Lydekker 1889 A, p. 999.
Woodward, A. S. 1896 B, p. 500.
Zittel, K. A. 1890 A, p. 285.

Notogoneus osculus Cope.

Cope, E. D. 1885 Y, p. 1091.
1886 T, p. 163, pl. i. figs. 4, 5.
Whitfield, R. P. 1890 A, p. 117.
Woodward, A. S. 1896 B, p. 500, pl. xviii, figs. 1, 2.
Eocene (Green River); Montana.

OSTEOGLOSSIDÆ.

Bridge, T. W. 1895 A, p. 302. (Osteoglossum.)
Cope, E. D. 1872 C, p. 333.
1884 O, pp. 67, 68.
Gegenbaur, C. 1898, p. 356. (Osteoglossum.)
Günther, A. 1868 A, vii, p. 377.
Hyrtl, J. 1854 A, p. 73.
Loomis, F. B. 1900 A, p. 229. (Plethodidæ, part.)
Müller, J. 1843 A, p. 217. (Osteoglossum.)
Müller, J. 1846 A. (Osteoglossum.)
1846 C. (Osteoglossum.)
Nicholson and Lydekker 1889 A, p. 999.
Owen, R. 1845 B, p. 137, pl. xlviii. (Osteoglossum.)
Reis, O. M. 1895 C, p. 169.
Zittel, K. A. 1890 A, p. 281.

PHAREODUS Leidy. Type *P. acutus* Leidy.

Leidy, J. 1873 D, p. 99.
Cope, E. D. 1871 E, p. 430. (Osteoglossum.)
1873 E, p. 637. (Phareodon, in part.)
1877 I, p. 807. (Dapedoglossus, type *D. testis*.)
1878 Z, p. 570. (Dapedoglossus.)
1884 O, p. 68. (Dapedoglossus.)
Leidy, J. 1873 B, p. 193.
Nicholson and Lydekker 1889 A, p. 999. (Dapedoglossus.)
Zittel, K. A. 1890 A, p. 281. (Dapedoglossus.)

Phareodus acutus Leidy.

Leidy, J. 1873 D, p. 99.
Cope, E. D. 1873 E, p. 637 (Phareodon acutus); p. 638 (P. sericeus).
1884 O, pp. 69, 72, pl. v, figs. 18–20. (Dapedoglossus.)
King, C. 1878 A, p. 405.
Leidy, J. 1873 B, pp. 193, 349, pl. xxxii, figs. 47–51.
Eocene (Bridger); Wyoming.

Phareodus æquipinnis (Cope).

Cope, E. D. 1878 F, p. 77. (Dapedoglossus.)
1884 O, p. 73, pl. vii, fig. 2. (Dapedoglossus.)
Eocene (Green River); Wyoming.

Phareodus encaustus (Cope).

Cope, E. D. 1871 E, p. 430. (Osteoglossum.)
1877 I, p. 808. (Dapedoglossus.)
1877 AA (Dapedoglossus).
1878 Z, p. 570. (Dapedoglossus.)
1884 O, p. 70, pl. vi, fig. 1. (Dapedoglossus.)
Leidy, J. 1872 B, p. 372. (Osteoglossum.)
Eocene (Green River); Wyoming.

Phareodus testis Cope.

Cope, E. D. 1877 I, p. 807.
1877 AA. (Dapedoglossus.)
1878 Z, p. 570.
1884 O, p. 71, pl. vii, fig. 1; pl. viii, figs. 1, 2.
Eocene (Green River); Wyoming.

ANOGMIUS Cope. Type *A. contractus* Cope.

Cope, E. D. 1871 J, p. 170.
1872 I, p. 354.
1875 E, pp. 220 A, 240.
1877 D, p. 178.
Loomis, F. B. 1900 A, p. 229 (Thryptodus, type *T. zitteli*); p. 235 (Pseudothryptodus, type *P. intermedius*); p. 254 ("Agnomius," a syn. of Osmeroides).
Sauvage, H. E. 1879 A, p. 52. (Syn. ? of Ischyrhiza.)
Stewart, A. 1900 A, p. 349.
Zittel, K. A. 1890 A, p. 268. (Syn. of Pachyrhizodus.)

Without doubt, close comparison will much reduce the number of species of this genus.

Anogmius aratus Cope.

Cope, E. D. 1877 G, p. 585.
Stewart, A. 1900 A, p. 340.
Cretaceous (Niobrara); Kansas.

Anogmius contractus Cope.

Cope, E. D. 1871 J, p. 170.
1872 I, p. 354.
1875 E. p. 240 (Anogmius); 220 A (Pachyrhizodus).
Cretaceous (Niobrara); Kansas.

Anogmius evolutus Cope.

Cope, E. D. 1877 D, p. 179.
Loomis, F. B. 1900 A, p. 257, pl. xxvi, figs. 5, 6. (Osmeroides.)
Stewart, A. 1898 D, p. 196. (Beryx multidentatus.)
1900 A, p. 347, pl. lxv, figs. 8, 9, 10; pl. lxvii.
Cretaceous (Niobrara); Kansas.

Anogmius favirostris Cope.

Cope, E. D. 1877 D, p. 178.
Loomis, F. B. 1900 A, p. 256. (Osmeroides.)
Cretaceous (Niobrara); Kansas.

Anogmius intermedius (Loomis).

Loomis, F. B. 1900 A, p. 236, pl. xxii, figs. 3–8. (Pseudothryptodus.)
Cretaceous (Niborara); Kansas.

Anogmius polymicrodus Stewart.

Stewart, A. 1898 D, p. 195. (Beryx?.)
Loomis, F. B. 1900 A, p. 256, pl. xxvi, figs. 1–4. (Osmeroides.)
Stewart, A. 1899 A, p. 20.
1899 D, p. 117, pl. xxxi.
1900 A, p. 342, pl. lxiv; pl. lxv, figs. 1–7; pl. lxvi; pl. lxvii, fig. "phar."
Cretaceous (Niobrara); Kansas.

Anogmius rotundus (Loomis).

Loomis, F. B. 1900 A, p. 235, pl. xxii, figs. 1, 2. (Thryptodus.)
Cretaceous (Niobrara); Kansas.

Anogmius zitteli (Loomis).

Loomis, F. B. 1900 A, p. 234, pl. xxi, figs. 1–10. (Thryptodus.)
Cretaceous (Niobrara); Kansas.

INCERTÆ SEDIS.

PROBALLOSTOMUS Cope Type *P. longulus* Cope.

Cope, E. D. 1891 H, p. 655.

Proballostomus longulus Cope.

Cope, E. D. 1891 H, p. 655.
Cope, E. D. 1892 B, p. 285.
Oligocene?; S. Dakota.

Order PLECTOSPONDYLI.

Cope, E. D. 1872 C, p. 332.
1878 A, p. 295.
Gill, T. 1893 A, p. 131.
Jordan and Evermann 1896 A, p. 160.
Woodward, A. S. 1898 B, p. 119.

CYPRINIDÆ.

Bloch, L. 1900 A. ("Cobitiden," "Cypriniden.")
Bridge, T. W. 1896 A, p. 547.
Brühl, B. C. 1847 A. ("Cyprinen.")
Cope, E. D. 1871 H. (>Cobitidæ.)
1871 I, p. 99. (>Cobitidæ.)
1872 C, p. 332. (Catostomidæ, Cyprinidæ, Cobitidæ.)
1883 L, p. 161. (>Cobitidæ.)
Dareste, C. 1872 A, p. 934. ("Cyprinoïdes.")
Gill, T. 1872 C, pp. 17, 18. (Catostomidæ, Cyprinidæ, Cobitidæ.)
1893 A, pp. 131, 132. (Catostomidæ, Cyprinidæ, Cobitidæ.)
Grassi, B. 1883 A.
Günther, A. 1868 A, p. 3.
1880 A, p. 587.
1881 A, p. 692.
Ihering, H. 1891 B.
Jordan, D. S. 1891 A.
Jordan and Evermann 1896 A, p. 161 (Catostomidæ); p. 199 (Cyprinidæ).
Klein, E. F. 1879 A, p. 110.
Kölliker, A. 1859 A. (Cyprinoidei.)
Koken, E. 1891 B, p. 26.
Leidy, J. 1871 C, p. 369.
Müller, A. 1853 A.
Müller, J. 1846 C, p. 183. (Cyprinoidei.)
Owen, R. 1845 B, p. 144. ("Cyprinoids.")
1866 A.
Parker, W. K. 1868 A.
Pictet, F. J. 1854 A, p. 102. (Cyprinoides.)
Quenstedt, F. A. 1885 A, p. 361.
Sagemehl, M. 1884 A, p. 1.
1891 A. (Cyprinidæ, Cobitidæ.)
Segond, L. A. 1873 B, p. 529. ("Cyprinoïdes.")
Stannius, H. 1854 A. (Cyprinoidei.)
Stephan, P. 1900 A.
Vaillant, L. 1883 A.
Vrolik, A. J. 1873 A, p. 265.
Zittel, K. A. 1890 A, p. 282. (Cyprinoidæ.)

CATOSTOMINÆ.

Cope, E. D. 1872 C, p. 332. (Catostomidæ.)
Gill, T. 1872 C, p. 17. (Catostomidæ.)
1893 A, p. 131. (Catostomidæ.)
Günther, A. 1868 A, p. 12.
Günther, A. 1880 A, p. 588. (Catostomina).
Jordan and Evermann 1896 A, p. 161. (Catostomidæ.)
Sagemehl, M. 1891 A.

PROTOCATOSTOMUS Whitfield. Type *P. constablei* Whitfield.

Whitfield, R. P. 1890 A, p. 120.

Protocatostomus constablei Whitfield.

Whitfield, R. P. 1890 A, p. 120, pl. iv.
Eocene; Wyoming.
See *Notogoneus osculus*, p. 392.

CATOSTOMUS Le Sueur. Type *C. catostomus* Le Sueur.

Le Sueur, 1817, Jour. Acad. Nat. Sci. Phila., i, p. 89.
Jordan and Evermann 1896 A, p. 173.
Sagemehl, M. 1891 A.

Catostomus batrachops Cope.

Cope, E. D. 1883 L, p. 151.
1889 F.
1889 S, p. 980.
Pleistocene (Equus beds); Oregon.

Catostomus cristatus Cope.

Cope, E. D. 1883 L, p. 160.
Pleistocene (Equus beds); Idaho.

Catostomus labiatus Ayres.

Ayres, W. O. 1855, Proc. Califor. Acad. Sci., i, p. 32.
Cope, E. D. 1883 L, p. 150.
1889 F.
1889 S.
Jordan and Evermann 1896 A, p. 177.
Recent and Pleistocene; Klamath Lake, Oregon.

Catostomus shoshonensis Cope.

Cope, E. D. 1883 L, p. 159.
Pleistocene (Equus beds); Idaho.

Amyzon Cope. Type *A. mentale* Cope.

Cope, E. D. 1872 P, p. 480.
1873 E, p. 642.
1884 O, pp. 742, 748.
Osborn, Scott, and Speir 1878 A, p. 99.
Zittel, K. A. 1890 A, p. 284.

Amyzon brevipinne Cope.

Cope, E. D. 1893 D.
Tertiary (Amyzon shales); British Columbia.

Amyzon commune Cope.

Cope, E. D. 1874 D, p. 50.
1874 B, p. 460.
1875 G, p. 3.
1884 O, p. 749, pl. v, fig. 21.
Osborn, Scott, and Speir 1878 A, p. 99.
Tertiary (Amyzon shales); Colorado.

Amyzon fusiforme Cope.

Cope, E. D. 1875 G, p. 5.
1884 O, p. 751.
Tertiary (Amyzon shales); Colorado.

Amyzon mentale Cope.

Cope, E. D. 1872 P, p. 481.
1872 MM, p. 775.
1873 E, p. 643.
1884 O, p. 749, pl. lix, fig. 2; lx, fig. 2.
Tertiary (Amyzon shales); Colorado.

Amyzon pandatum Cope.

Cope, E. D. 1875 G, p. 4.
1884 O, p. 750.
Tertiary (Amyzon shales); Colorado

CYPRININÆ.

This subfamily is equivalent to the *Cyprinidæ* as recognized by many of the authors referred to under that family.

Brühl, B. C. 1847 A. ("Cyprinen.")
Günther, A. 1880 A, p. 589. (Cyprininæ.)

Diastichus Cope. Type *D. macrodon* Cope.

Cope, E. D. 1870 M, p. 539.
1871 H, p. 55.
1883 L, pp. 154, 158.
Zittel, K. A. 1890 A, p. 284.

Diastichus macrodon Cope.

Cope, E. D. 1870 M, p. 539.
1883 L, p. 158.
Late Tertiary; Idaho.

Diastichus parvidens Cope.

Cope, E. D. 1870 M, p. 540.
1883 L, p. 158.
Late Tertiary; Idaho.

Diastichus strangulatus Cope.

Cope. E. D. 1883 L, p. 158.
Late Tertiary; Idaho.

Aphelichthys Cope. Type *A. lindahlii* Cope.

Cope, E. D. 1893 B, p. 19.

Aphelichthys lindahlii Cope.

Cope, E. D. 1893 B, p. 19.
Pliocene or Pleistocene; S. Illinois.

Rutilus Raf. Type *Cyprinus rutilus* Raf.

Rafinesque, C. S., 1820, Ichthyol. Ohioensis, pp. 48, 50.
Cope, E. D. 1870 M, p. 543. (Anchybopsis, type *A. latus.*)
1878 C, p. 229. (Anchybopsis.)
1883 L, p. 142. (Myloleucus.)
Günther, A. 1868 A, p. 267. (Leuciscus, in part.)
Jordan and Evermann 1896 A, p. 243.
Zittel, K. A. 1890 A, p. 284. (Anchybopsis.)

Rutilus altarcus (Cope).

Cope, E. D. 1878 C, p. 229. (Anchybopsis.)
1883 L, p. 146. (Leucus.)
1889 F. (Leucus.)
1889 S, p. 980. (Leucus.)
Pleistocene (Equus); Oregon.

Rutilus condonianus (Cope).

Cope, E. D. 1883 L, p. 156. (Leucus.)
Pleistocene (Equus); Oregon.

Rutilus gibbarcus (Cope).

Cope, E. D. 1878 C, p. 230. (Alburnops.)
1878 C, p. 229. (Alburnops breviarcus.)
1883 L, p. 143. (Myloleucus.)
1889 F, p. 161. (Myloleucus.)
1889 S, p. 980. (Myloleucus.)
Pleistocene (Equus); Oregon.

Rutilus latus (Cope).

Cope, E. D. 1870 M, p. 543. (Anchybopsis.)
1883 L, pp. 144, 146, 156. (Leucus.)
Pleistocene (Equus); Idaho.

NOTROPIS Raf. Type *N. atherinoides* Raf.

Rafinesque, C. S., 1818, Amer. Month. Mag., ii, p. 204.
Jordan and Evermann 1896 A, p. 254.

Notropis angustarcus (Cope).

Cope, E. D. 1878 C, p. 230. (Alburnops.)
Cope, E. D. 1883 L, p. 142. (Cliola.)
1889 F. (Cliola.)
1889 S, p. 980. (Cliola.)
Pleistocene (Equus); Oregon.

LEUCISCUS Cuvier. Type, none designated.

Cuvier, G., 1817, Règne Anim., ed. i, p. 194.
Cope, E. D. 1870 M, p. 540 (Oligobelus, type *O. arciferus*); p. 541 (Semotilus).
1883 L, p. 156. (Squalius.)
Günther, A. 1868 A, p. 207.
1880 A, p. 598.
Jordan and Evermann 1896 A, p. 228.
Zittel, K. A. 1890 A, p. 282 (Leuciscus); p. 284 (Oligobelus).

Leuciscus arciferus (Cope).

Cope, E. D. 1870 M, p. 541. (Oligobelus.)
1883 L, p. 158. (Squalius.)
Pleistocene; Idaho.

Leuciscus bairdii (Cope).

Cope, E. D. 1870 M, p. 542. (Semotilus.)
1883 L, p. 158. (Squalius.)
Pleistocene; Idaho.

Leuciscus laminatus (Cope).

Cope, E. D. 1870 M, p. 541. (Oligobelus.)
1883 L, p. 157. (Squalius.)
Pleistocene; Idaho.

Leuciscus posticus (Cope).

Cope, E. D. 1870 M, p. 541. (Semotilus.)
1883 L, p. 157. (Squalius.)
Pleistocene; Idaho.

Leuciscus reddingi (Cope).

Cope, E. D. 1883 L, p. 157. (Squalius.)
Pleistocene; Idaho.

Leuciscus turneri Lucas.

Lucas, F. A. 1900 F, p. 338, pl. viii.
Miocene; Nevada.

MYLOCYPRINUS Leidy. Type *M. robustus* Leidy.

Leidy, J. 1870 K, p. 70.
Cope, E. D. 1870 M, pp. 539, 543.
1883 L, p. 154.
Leidy, J. 1871 C, p. 369.
Peters, 1880, Monatsber. Akad. Wissensch. Berlin, p. 925, figure. (Mylopharyngodon, type *Leuciscus æthiops*.)
Zittel, K. A. 1890 A, p. 284.

Mylocyprinus inflexus Cope.

Cope, E. D. 1883 L, p. 154.
Pleistocene; Idaho.

Mylocyprinus robustus Leidy.

Leidy, J. 1870 K, p. 70.
Cope, E. D. 1870 M, p. 544 (M. kingii, M. robustus); p. 545 (M. longidens).
1883 L, p. 155. (M. robustus, with M. kingii and longidens as subspecies.)
Leidy, J. 1871 C, p. 369.
1873 B, pp. 262, 348, pl. xvii, figs. 11-17.
Pleistocene; Idaho.

Order PHTHINOBRANCHII nom nov.

Interclavicles developed. Elements of the branchial arches more or less reduced. Post-temporal simple. Basis cranii simple. Head more or less produced. Ventral fins abdominal, subabdominal, or wanting. Most families with more or less well-developed dermal armature.

In this order it is intended to unite the *Hemibranchii* and the *Lophobranchii*.

Suborder HEMIBRANCHII Cope.

Cope, E. D., 1871, Trans. Amer. Philos. Soc., xiv, p. 456.
1872 C, p. 338.
Gill, T. 1872 C, p. 13.
Gill, T. 1893 A, p. 137.
Jordan and Evermann 1896, A p. 741.
Ussow, S. 1900 A, p. 227. (Gasterosteiformes.)

DERCETIDÆ.

Cope, E. D. 1878 F, p. 67.
Agassiz, L. 1843 B, ii, pt. ii, p. 258. (Genus Dercetis.)
Günther, A. 1880 A, p. 666. (Hoplopleuridæ.)
Lütken, C. 1873 A, p. 17. (Dercetiformes.)
Marck, W. 1863 A, p. 58. (Dercetiformes.)

Nicholson and Lydekker 1889 A, p. 997.
Pictet, F. J. 1854 A, p. 213 (Hoplopleurides); p. 216, pl. xxxii, figs. 13–16 (Dercetes).
Pictet and Humbert 1866 A, p. 90. (Hoplopleurides.)
Reis, O. M. 1895 C, pp. 169, 180, 182. (Hoplopleuridæ.)
Williston, S. W. 1899 B, p. 115.
1900, in Stewart A. 1900 A, p. 380.
Zittel, K. A. 1890 A, p. 264. (Hoplopleuridæ.)

ICHTHYOTRINGA Cope. Type *I. tenuirostris* Cope.

Cope, E. D. 1878 F, p. 69.
1878 HH, p. 57.
Williston, S. W. 1899 B, p. 115.
1900, in Stewart A. 1900 A, p. 382.

Ichthyotringa tenuirostris Cope.

Cope, E. D. 1878 F, p. 69.
Cretaceous (Niobrara); South Dakota.

LEPTECODON Williston. Type *L. rectus* Willist.

Williston, S. W. 1899 B, p. 113.

Leptecodon rectus Willist.

Williston, S. W. 1899 B, p. 113, pl. xxvi.
Williston, S. W. 1900, in Stewart, A. 1900 A, p. 380, pl. lxxiii.
Cretaceous (Niobrara); Kansas.

TRIÆNASPIS Cope. Type *T. virgulatus* Cope.

Cope, E. D. 1878 F, p. 67.
1878 HH, p. 57.
Williston, S. W. 1899 B, p. 115.
1900, in Stewart, A, 1900 A, p. 382.

Triænaspis virgulatus Cope.

Cope, E. D. 1878 F, p. 67.
Cretaceous (Niobrara): S. Dakota.

LEPTOTRACHELUS Marck. Type *L. armatus* Marck.

Marck, W. 1863 A, p. 59.
Cope, E. D. 1878 F, p. 68.
1878 HH, p. 57.
Davis, J. W. 1887 C, p. 619.
Nicholson and Lydekker 1889 A, p. 997. (Syn. of Dercetes.)
Pictet and Humbert 1866 A, p. 93.
Reis, O. M. 1895 C, p. 169.
Zittel K. A. 1890 A, p. 268.

Leptotrachelus longipinnis Cope.

Cope, E. D. 1878 F, p. 68.
Williston, S. W. 1899 B, p. 115.
1900, in Stewart, A, 1900 A, p. 382.
Cretaceous (Niobrara); S. Dakota.

GASTEROSTEIDÆ.

Cope, E. D. 1872 C, p. 388.
Gill, T. 1893 A, p. 137.
Günther, A. 1859 *L*, p. 1.
1880 A, p. 504.
Jordan and Evermann 1896 A, p. 742.
Parker, W. K. 1868 A, p. 39.
Sauvage, H. E. 1874 A. ("Épinoches.")

GASTEROSTEUS Linn. Type *G. aculeatus* Linn.

Linnæus, C., 1758, Syst. Nat., ed. x, p. 489.
Günther, A. 1859 A, p. 2.
1880 A, p. 505.
Huxley, T. H. 1858 C, p. 39.
Jordan and Evermann 1896 A, p. 746.
Owen, R. 1845 B, p. 91.
Parker, W. K. 1868 A, p. 39.
Sauvage, H. E. 1874 A, p. 5.

Gasterosteus bispinosus Walbaum.

Walbaum, 1792, Artedi Pisc., p. 450.
Dawson, J. W. 1877 B, p. 341. (G. aculeatus?)
1890 A, p. 86. (G. aculeatus?)
Jordan and Evermann 1896 A, p. 748.
Living; Labrador to New Jersey: Pleistocene; Canada.

It seems most probable that the stickleback found fossil in Canada by Dr. Dawson is the *G. bispinosus*, common on our Eastern coast.

Order MESICHTHYES nom. nov.

Actinopteri with anterior vertebræ unmodified and not connected with auditory apparatus. Branchial arches well developed. Precoracoid arch and interclavicles absent. Ventral fins abdominal.

This order is intended to include the *Haplomi*, the *Synentognathi*, and the *Percesoces*.

Suborder Haplomi Cope.

Cope, E. D. 1872 C, pp. 328, 333.
Gill, T. 1872 C, p. 14.
Gill, T. 1893 A, p. 133.
Jordan and Evermann 1896 A, p. 622.

LUCIIDÆ.

Unless otherwise indicated, the family name *Esocidæ* is used by the following writers.

Bridge, T. W. 1896 A, p. 545.
Brühl B. C. 1847 A. (Esox.)
Cope, E. D. 1872 C, p. 333.
1875 E, p. 280. (Ischyrhizidæ.)
Dareste, C. 1872 A, p. 1086.
Gill, T. 1872 C, p. 15.
Grassi, B. 1883 H.
Günther, A. 1866 A, p. 226.
1880 A, p. 623.
1881 A, p. 693.
Jordan and Evermann 1896 A, p. 624. (Luciidæ.)
Klein, E. F. 1879, p. 108. (Esox.)
Kölliker, A. 1859 A. (Esoces.)
Müller, A. 1853 A.
Müller, J. 1843 A, p. 215. (Esoces.)
1846 C, p. 188. (Esoces.)
Nicholson and Lydekker 1889 A, p. 1000.
Owen, R. 1845 B, p. 131. ("Lucioids.")
1866 A, p. 10 *et seq.*
Parker, W. K. 1868 A, p. 54.
Pictet, F. J. 1854 A, p. 108.
Quenstedt, F. A. 1885 A, p. 365. (Esocini.)
Reis, O. M. 1895 C, p. 170.
Röse, C. 1897 A, with figures.
Stannius, H. 1854 A. (Esoces.)
Stephan, P. 1900 A. (Esox.)
Vaillant, L. 1883 A.
Vrolik, A. J. 1873 A, pp. 235, 261.
Woodward, A. S. 1898 B, p. 120.
Zittel, K. A. 1890 A, p. 270.

Ischyrhiza Leidy. Type *I. mira* Leidy.

Leidy, J. 1856 K, p. 221.
Cope, E. D. 1872 I, p. 355.
1875 E, p. 280.
Leidy, J. 1857 A, p. 272.
Zittel, K. A. 1890 A, p. 270.

This genus is assigned only provisionally to the *Luciidæ*.

Ischyrhiza antiqua Leidy.

Leidy, J. 1856 L, p. 256.
Cope, E. D. 1875 E, p. 280.
1875 V, p. 32.
1887 G, p. 566.
Emmons, E. 1858 B, p. 225, figs. 47, 48.
Leidy, J. 1857 A, p. 272.
Leidy, J. 1860 B, p. 120. (Syn. of I. mira.)

Cretaceous; North Carolina: (Fox Hills); New Mexico.

Ischyrhiza mira Leidy.

Leidy, J. 1856 K, p. 221.
Cope, E. D. 1872 I, p. 355.
1875 E, p. 280.
Leidy, J. 1860 B, p. 120, pl. xxv, figs. 3–9. (I. antiqua a synonym.)

Cretaceous; New Jersey: Miocene ?; South Carolina.

Ischyrhiza ? radiata Clark.

Clark, W. B. 1895 A, p. 4.
1897 A, p. 60, pl. vii, figs.

Eocene; Virginia.

PŒCILIIDÆ.

Cope, E. D. 1872 C, p. 338. (Cyprinodontidæ.)
Gill, T. 1894 B, p. 115. (Pœciliidæ.)
1896 B, p. 221. (Pœciliidæ.)
Günther, A. 1866 A, p. 299. (Cyprinodontidæ.)
1880 A, p. 613. (Cyprinodontidæ.)
1881 A, p. 693. (Cyprinodontidæ.)
Ihering, H. 1891 B, p. 477. (Cyprinodontidæ.)
Jordan and Evermann 1896 A, p. 630.
Kölliker A. 1859 A. (Cyprinodentes.)
Müller, J. 1846 C, pp. 183, 202. (Cyprinodontes.)
Nicholson and Lydekker 1889 A, p. 1000. (Cyprinodontidæ.)
Reis, O. M. 1895 C, p, 170. ("Cyprinodonten.")
Stannius H. 1854 A. (Cyprinodontes.)
Zittel, K. A. 1890 A, p. 281. (Cyprinodontidæ.)

Gephyura Cope. Type *G. concentrica* Cope.

Cope, E. D. 1891 H, p. 654.

The position of the genus is in doubt.

Gephyura concentrica Cope.

Cope, E. D. 1891 H, p. 654.
1892 B, p. 285.

Oligocene ?; South Dakota.

Suborder Percesoces Cope.

Cope, E. D., 1871, Trans. Amer. Phil. Soc., xiv, p. 456.
1872 C, pp. 335, 337.
Gill, T. 1872 C, p. 13.
Gill, T. 1893 A, p. 133.
Jordan and Evermann 1896 A, p. 787.
Starks, E. C. 1899 A, p. 1.

MUGILIDÆ.

Agassiz, L. 1843 B (1844), v, p. 119. ("Mugiloides.")
Cope, E. D. 1872 C, p. 338.
Dareste, C. 1872 A, p. 1175. ("Mugiloides.")
Gill, T. 1872 C, p. 13.
Günther, A. 1861 A, p. 409.
 1880 A, p. 501.
Jordan and Evermann 1898 A, p. 808.
Kölliker, A. 1859 A. (Mugiloidei.)
Nicholson and Lydekker 1889 A, p. 1005.
Owen, R. 1845 B, p. 120. ("Mugiloids.")
 1866 A, p. 11 *et seq.*
Parker, W. K. 1868 A, p. 50.
Stannius, H. 1854 A. (Mugiloidei.)
Starks, E. C. 1899 A, p. 1.
Zittel, K. A. 1890 A, p. 312.

It is not certain that any of the genera here assigned to this family really belong to it.

CLADOCYCLUS Agassiz. Type *C. lewesiensis* Agassiz.

Agassiz, L. 1843 B (1844), v, p. 103.
Geinitz, H. B, 1868 A, p. 42.
 1875 A. p. 224.
Leidy, J. 1873 B, p. 288.
Loomis, F. B, 1900 A, p. 237. (Syn. of Ichthyodectes.)
Nicholson and Lydekker 1889 A, p. 1006.
Pictet, F. J. 1854 A, p. 94.
Woodward and Sherborn 1890 A, p. 34.

Cladocyclus occidentalis Leidy.

Leidy, J. 1856 M, p. 256.
 1857 C, p. 90.
 1873 B, pp. 288, 347, pl. xvii, figs. 21, 22; pl. xxx, fig. 5.
Loomis, F. B. 1900 A, pp. 237, 242. (Syn. of Ichthyodectes arcuatus.)
Whiteaves, J. F. 1889 B, p. 195, pl. xxvi, figs. 8, 9.
 Cretaceous; South Dakota, Manitoba.

PELECORAPIS Cope. Type *P. varius* Cope.

Cope, E. D. 1874 C, p. 39.
 1875 E, pp. 182, 273.
 1877 G, p. 587.
Zittel, K. A. 1890 A, p. 312.

Pelecorapis berycinus Cope.

Cope, E. D. 1877 G, p. 587.
 Cretaceous (Pierre); Montana.

Pelecorapis varius Cope.

Cope, E. D. 1874 C, p. 39.
 1875 E, pp. 182, 273.
 1877 G, p. 587.
 Cretaceous (Benton); Kansas.

SYLLÆMUS Cope. Type *S. latifrons* Cope.

Cope, E. D. 1875 E, pp. 180, 273.
 1877 K, p. 26.
Nicholson and Lydekker 1889 A, p. 1005. (Syn.? of Calamopleurus.)
Stewart, A. 1900 A, p. 383.
Woodward, A. S. 1888 I, p. 325.
Zittel, K. A. 1890 A, p. 312. (Scyllæmus.)

Syllæmus latifrons Cope.

Cope, E. D. 1875 E, pp. 181, 273.
 1877 K, p. 27.
Stewart, A. 1900 A, p. 384, pl. lxxii.
 Cretaceous; New Mexico?: Cretaceous (Benton); Kansas.

SPHYRÆNIDÆ.

Agassiz, L., 1843 B, v. p. 93. ("Sphyrænoides.")
 1845 A, p. 291. (Sphyrænoidæ.)
Bridge, T. W. 1896 A, p. 569.
Cope, E. D. 1870 L, p. 529.
Gill, T. 1872 C, p. 12.
Günther, A. 1860 A, p. 334.
 1880 A, p. 499.
Günther, A. 1881 A, p. 690.
Jordan and Evermann 1898 A, p. 822.
Klein, E. F. 1879 A, p. 91.
Nicholson and Lydekker 1889 A, p. 1006.
Quenstedt, F. A. 1885 A, p. 375. (Sphyrænoidei.)
Starks, E. C. 1899 A, p. 1.
Zittel, K. A. 1890 A, p. 312.

DICTYODUS Owen. Without designated type.

Owen, R., 1839, Rep. Brit. Assoc. Adv. Sci. for 1838, p. 142.
Agassiz, L. 1843 B (1844), v, pp. 8, 98. (Sphyrænodus.)
Giebel, C. G. 1848 A, p. 92. (Sphyrænodus.)
Owen, R. 1845 B, pp. 6, 12, pl. liv (Dictyodus); p. 128 (Sphyrænodus).
Pictet, F. J. 1854 A, p. 93. (Sphyrænodus.)
Zittel, K. A. 1890 A, p. 312.

Dictyodus silovianus (Cope).

Cope, E. D. 1875 H, p. 362. (Sphyrænodus).
 Miocene; New Jersey.

Dictyodus speciosus (Leidy.)

Leidy, J. 1856 K, p. 221. (Sphyræna.)
Cope, E. D. 1867 C, p. 142. (Sphyræna.)
 1875 H, p. 362. (Sphyrænodus.)
 Miocene; New Jersey.

Sphyræna Bloch and Schn. Type *Esox sphyræna* Linn.

Bloch and Schneider, 1801, Syst. Ichth., p. 109.
Agassiz L. 1843 B (1844), v, pp. 8, 93.
1845 A, p. 291.
Günther, A. 1860 A, p. 334.
Jordan and Evermann 1896 A, p. 822.
Owen, R. 1845 B, pp. 4, 6, 126, pl. liii.
Pictet, F. J. 1854 A, p. 92.
Starks, E. C. 1899 A, p. 8.
Zittel, K. A. 1890 A, p. 312.

Sphyræna major Leidy.

Leidy, J. 1855 C, p. 397.
1877 A, p. 254, pl. xxxiv, figs. 37–41.
Sands of Ashley River; South Carolina.

Order PERCOMORPHI.

Cope, E. D. 1872 C, p. 341.
1884 O, p. 79.
Cope, E. D. 1889 R, p. 860.

Suborder Squamipinnes.

Günther, A. 1860 A. p. 1.
Jordan and Evermann 1896 A. p. 781,
1898 A. p. 1665.
Kölliker, A. 1859 A. (Sqamipennes.)
Zittel, K. A. 1890 A. p 299. (Squamipennes.)

CHÆTODONTIDÆ.

Gill, T. 1872 C, p. 8. (Chætodontidæ, Ephippiidæ.)
Cope, E. D. 1872 C, p. 342.
Günther, A. 1860 A, p. 1. (Squamipinnes, in part.)
1880 A, p. 397. (Squamipinnes, in part.)
Jordan and Evermann 1898 A, p. 1666 (Ephippidæ); p. 1669 (Chætodontidæ).
Kölliker, A. 1859 A. (Squamipennes.)
Nicholson and Lydekker 1889 A, p. 1013.
Parker, W. K. 1868 A, p. 50.
Zittel, K. A. 1890 A, p. 299. (Squamipennes.)

Chætodipterus Lacépède. Type *C. faber* (Brouss.).

Lacépède, 1802, Hist. Nat. Poiss., iv, p. 503.
Günther, A. 1860 A, p. 60. (Ephippus.)
1880 A, p. 402, fig. 171. (Ephippus.)
Jordan and Evermann 1898 A, p. 1667.
Nicholson and Lydekker 1889 A, p. 1013. (Ephippus.)
Owen, R. 1866 A, pp. 108, 111. (Ephippus.)
Zittel, K. A. 1890 A, p. 299. (Ephippus.)

Chætodipterus faber (Brouss.).

Broussonet, 1782, Ichth. Decas, 1, v, pl. 4, *fide* Jordan and Evermann. (Chætodon.)
Jordan and Evermann 1898 A, p. 1668.
Leidy, J. 1889 E, p. 31. (Ephippus gigas.)
Recent; Cape Cod to Rio Janeiro: Pleistocene; Florida.

Suborder Pharyngognathi.

Cope, E. D. 1872 C, p. 343.
Gill, T. 1872 C, p. 6.
1893 A, p. 135. (Pomacentroidea, Labroidea).
Ihering, H. 1891 B, p. 508.
Jordan and Evermann 1898 A, p. 1571.
Kner, R. 1860 A, p. 41.
Kölliker, A. 1859 A.
Müller, J. 1846 C, pp. 131, 155, 199.
Parker, W. K. 1868 A, p. 49.
Reis, O. M. 1895 C, p. 163.
Stannius, H. 1854 A.
Zittel, K. A. 1890 B, p. 287.

LABRIDÆ.

Agassiz L. 1845 A, p. 291. (Labroidæ.)
Brühl, B. C. 1847 A.
Cocchi, I. 1864 A. (Pharyngodopilidæ.)
Cope, E. D. 1872 C, p. 343.
Dareste, C. 1872 A, p. 1174. ("Labroides.")
Gill, T. 1872 C, p. 7.
1893 A, p. 135.
Günther, A. 1862 A, p. 65.
1880 A, p. 525.
Jordan, D. S. 1891 A.
Jordan and Evermann 1898 A, p. 1571.
Kner, R. 1860 A, p. 41. ("Labroiden.")
Kölliker, A. 1859 A. (Labroidei.)
Müller, J. 1846 C, p. 168. (Labroidei.)
Nicholson and Lydekker 1889 A, p. 1004. (Labridæ, Pharyngodopilidæ.)
Owen, R. 1845 B, p. 108. ("Labroids.")
1866 A, p. 11 *et seq.* (Cyclo-labridæ.)
Parker, W. K. 1868 A, p. 50.
Reis, O. M. 1895 C.
Sauvage, H. E. 1875 B, p. 615. (Pharyngodopilidæ, Phyllodidæ.)
Zittel, K. A. 1890 A, p. 288.

In this family are included provisionally the genera *Nummopalatus* and *Phyllodus*.

PROTAUTOGA Leidy. Type *P. conidens* Leidy.

Leidy, J. 1873 C, p. 15. (As subgenus of Tautoga.)
1873 B, p. 347.
Nicholson and Lydekker 1889 A, p. 1004.
Zittel, K. A. 1890 A, p. 289.

Protautoga conidens Leidy.

Leidy, J. 1873 C, p. 15. [Tautoga (Protautoga.)]
1873 A, p. 312. [Tautoga (Protautoga.)]
1873 B, p. 346, pl. xxxii, figs. 56, 57. [Tautoga (Protautoga.)]
Miocene; Virginia.

NUMMOPALATUS Roualt. Type *N. edwardsius* Roualt.

Roualt, M. 1858 A, p. 101.
Cocchi, I. 1864 A, p. 59. (Pharyngodopilus.)
Cornuel, J. 1877 A, p. 620.
Günther, A. 1880 A, p. 526.
Leidy, J. 1855 C, p. 396. (Odax.)
Reis, O. M. 1895 C, p. 174.
Sauvage, H. E. 1875 B, p. 613.
Zittel, K. A. 1890 A, p. 289.

Nummopalatus carolinensis (Leidy.)

Leidy, J. 1855 C, p. 396. (Odax.)
1877 A, p. 256, pl. xxxiv. figs. 19, 24. (Pharyngodopilus.)
Phosphate beds; South Carolina.

PHYLLODUS Agassiz. Type not designated.

Agassiz, L. 1843 B, ii, pt. ii, p. 238.
1844 A.
Cocchi, I. 1864 A, p. 59.
Cornuel, J. 1877 A, p. 619.
Giebel, C. G. 1848 A, p. 174.
Günther, A. 1880 A, p. 526.
Nicholson and Lydekker 1889 A, p. 1004, fig. 941.
Owen, R. 1845 B, p. 138, pl. xliv, fig. 2; pl. xlvii, figs. 1, 2.
Pictet, F. J. 1854 A, p. 206.
Quenstedt, F. A. 1885 A, p. 381.
Sauvage, H. E. 1875 B, p. 615.
Wyman, J. 1850 B, p. 234.
1850 C.
Zittel, K. A. 1890 A, p. 289.

Phyllodus curvidens Marsh.

Marsh, O. C. 1870 E, p. 229.
Cope, E. D. 1875 H, p. 362.
Miocene; New Jersey.

Phyllodus elegans Marsh.

Marsh, O. C. 1870 E, p. 228.
Eocene; New Jersey.

Phyllodus hipparionyx Eastman.

Eastman, C. R. 1900, Geol. Surv. Maryland, iv, p. 103.
Wyman, J. 1850 B, p. 234, figs. 9*a*, 9*b*. ("Phyllodus.")
Eocene; South Carolina.

POMACENTRIDÆ.

Gill, T. 1872 C, p. 7.
Günther, A, 1862 A, p. 1.
1880 A, p. 524.
Jordan and Evermann 1898 A, p. 1543.
Kner, R. 1860 A, p. 42. ("Pomacentrinen.")
Nicholson and Lydekker 1889 A, p. 1004.
Owen, R. 1866 A, p. 11. (Ctenolabridæ.)
Zittel, K. A. 1890 A, p. 287.

PRISCACARA Cope. Type *P. serrata* Cope.

Cope, E. D. 1877 I, p. 816.
1884 O, p. 92.
Nicholson and Lydekker 1888 A, p, 1004.
Zittel, K. A. 1890 A, p. 288.

Priscacara clivosa Cope.

Cope, E. D. 1878 F, p. 76.
1877 AA.
1884 O, p. 96, pl. xiii, fig. 3.
Eocene (Green River); Wyoming.

Priscacara cypha Cope.

Cope, E. D. 1877 I, p. 817.
1878 Z, p. 570.
1884 O, p. 94, pl. xiii, fig. 2.
Eocene (Green River); Wyoming.

Priscacara hypsacantha Cope.

Cope, E. D. 1886 T, p. 164, pl. i, fig. vi.
Eocene (Green River); Wyoming.

Priscacara liops Cope.

Cope, E. D. 1877 I, p. 818.
1877 AA.
1878 Z, p. 570.
1884 O, p. 97, pl. xiv, figs. 2, 3.
Eocene (Green River); Wyoming.

Priscacara oxyprion Cope.

Cope, E. D. 1878 F, p. 74.
1884 O, p. 94, pl. xiv, fig. 5.
Eocene (Green River); Wyoming.

Priscacara pealei Cope.

Cope, E. D. 1878 F, p. 75.
1884 O, p. 96, pl. viii, fig. 4; pl. xiv, fig. 4.
Eocene (Green River); Wyoming.

Priscacara serrata Cope.

Cope, E. D. 1877 I, p. 816.

Cope, E. D. 1877 AA.
1878 Z, p. 570.
1884 O, p. 93, pl. xiii, fig. 1.
1886 T, p. 165.
Eocene (Green River); Wyoming.

Priscacara testudinaria Cope.

Cope, E. D. 1884 O, p. 98, pl. i, fig. 7.
1880 T, p. 303. (No description.)
Eocene (Manti); Utah.

Superfamily BERYCOIDEA Gill.

Gill, T. 1872 C, p. 10.
Gill, T. 1893 A, p. 133.

BERYCIDÆ.

Bridge, T. W. 1896 A, p. 560.
Cope, E. D. 1872 C, p. 342.
Gill, T. 1872 C, p. 10.
Günther, A. 1859 A, pp. 8, 12.
1880 A, p. 420.
Jordan and Evermann 1898 A, p. 837.
Klein, E. F. 1879 A, p. 80.
Nicholson and Lydekker 1889 A, p. 1010.
Reis, O. M. 1895 C, p. 175.
Zittel, K. A. 1890 A, p. 291.

Beryx Cuvier. Type *B. decadactylus* C. and V.

Cuvier, G., 1829, Règne Anim., ed. ii, p. 151.
Agassiz, L. 1844 A.
Bridge, T. W. 1896 A, p. 563.
Dixon, F. 1878 A, p. 398.
Eichwald, E. 1868 A, p. 1196.
Günther, A. 1859 A, p. 12.
1880 A, p. 422.
Huxley, T. H. 1876 B, xiii, p. 388.
Pictet, F. J. 1854 A, p. 49.
Pictet and Humbert 1866 A, pp. 13, 27.
Williamson, W. C. 1849 A, p. 444.
Zittel, K. A. 1896 A, p. 291.

Beryx insculptus Cope.

Cope, E. D. 1869 F, p. 240.
1872 I, p. 357.
1875 E, p. 272, pl. lii, fig. 4.
Cretaceous; New Jersey.

Superfamily SCOMBROIDEA Gill.

Gill, T. 1872 C, p. 8.
1893 A, p. 133.
Kölliker, A. 1859 A. (Scomberoidei.)
Parker, W. K. 1868 A, p. 50. ("Scombroids.")
Stannius, H. 1854 A. (Scomberoidei, as family.)

XIPHIIDÆ.

Agassiz, L. 1845 A, p. 289. (Xiphioidæ.)
Cope, E. D. 1872 C, p. 342. (Xiphiadidæ.)
Gill, T. 1872 C, p. 8,
1883 A, p. 485. (Xiphiidæ, Histiophoridæ.)
Günther, A. 1860 A, p. 511.
Günther, A. 1880 A. p. 431.
Jordan and Evermann 1896 A, p. 893.
Nicholson and Lydekker 1889 A, p. 1010.
Reis, O. M. 1895 C.
Zittel, K. A. 1890 A, p. 300.

ISTIOPHORINÆ.

Gill, T. 1883 A, p. 486. (Histiophoridæ.)
1893 A, p. 133. (Histiophoridæ.)
Goode, G. B. 1882 A, p. 417. (Tetrapturinæ.)
Jordan and Evermann 1896 A, p. 890. (Istiophoridæ.)

Istiophorus Lacépède. Type *I. gladifer* = *I. gladius*.

Lacépède, 1802, Hist. Nat. Poissons, iii, p. 374.
Goode, G. B. 1882 A, p. 423. (Histiophorus.)
Günther, A. 1860 A, p. 512. (Histiophorus.)
1880 A, p. 431. (Histiophorus.)
Jordan and Evermann 1896 A, p. 890.
Nicholson and Lydekker 1889 A, p. 1010. (Histiophorus.)
Owen, R. 1845 B, p. 121. (Histiophorus.)
Quenstedt, F. A. 1885 A, p. 371. (Histiophorus.)

Istiophorus antiquus (Leidy).

Leidy, J. 1855 C, p. 397. (Xiphias.)
Cope, E. D. 1869 L, p. 310. (Histiophorus.)
Eocene; New Jersey.

Istiophorus homalorhamphus Cope.

Cope, E. D. 1869 L, p. 310. (Histiophorus.)
Tertiary greensand; New Jersey.

Istiophorus parvulus Marsh.

Marsh, O. C. 1870 E, p. 227. (Histiophorus.)
Eocene; New Jersey.

Istiophorus robustus (Leidy).

Leidy, J. 1860 B, p. 119, pl. xxvii, figs. 3-5. (Xiphias.)
Cope, E. D. 1869 L, p. 310. (Histiophorus.)
Post-pliocene; South Carolina.

EMBALORHYNCHUS Marsh. Type *E. kinnei* Marsh.

Marsh, O. C. 1870 E, p. 228.

Embalorhynchus kinnei Marsh.

Marsh, O. C. 1870 E, p. 228.
Eocene; New Jersey.

TRICHIURIDÆ.

Cope, E. D. 1872 C, p. 342.
Dames, W. 1887 B, p. 71.
Günther, A. 1860 A, p. 342.
Günther, A. 1880 A, p. 433.
Jordan and Evermann 1896 A, p. 888.
Zittel, K. A. 1890 A., p. 302.

TRICHIURUS Linn. Type *T. lepturus* Linn.

Linnæus, C., 1758, Syst. Nat., ed. x, p. 246.
Günther, A. 1860 A, p. 346.
Jordan and Evermann 1896 A, p. 888.
Owen, R. 1845 B, pp. 2, 125, pl. i, fig. 8.

Trichiurus lepturus Linn.

Linnæus C., 1758, Syst. Nat., ed. x, p. 246.
Jordan and Evermann 1896 A, p. 889.
Leidy, J. 1860 B, p. 121, pl. xxv, fig. 2. (T. lepturus fossilis.)
Recent; West Indies to Virginia: Post-pliocene; South Carolina.

CARANGIDÆ.

Gill, T. 1872 C, p. 8.
Cope, E. D. 1872 C, p. 342.
Gill, T. 1893 A, p. 133.
Günther, A. 1860 A, p. 417.
1880 A, p. 440.
Jordan and Evermann 1896 A, p. 895.
Nicholson and Lydekker 1889 A, p. 1008.
Pictet and Humbert 1866 A, p. 45. ("Carangides.")
Reis, O. M. 1895 C, p. 177.
Zittel, K. A. 1890 A, p. 304.

PLATAX Cuvier. Type not specified.

Cuvier and Valenciennes, 1831, Hist. Nat. Poiss., vii, p. 213.
Agassiz, L. 1844 A, p. 207.
Davis, J. W. 1887 C, p. 523.
Giebel, C. G. 1848 A, p. 56.
1860 A, p. 489.
Günther, A. 1880 A, p. 448.
Nicholson and Lydekker 1889 A, p. 1009.
Owen, R. 1845 B, p. 2, pl. i, fig. 2.
Pictet, F. J. 1854 A, p. 67.
Pictet and Humbert 1866 A, p. 46.
Quenstedt, F. A. 1885 A, p. 386.
Zittel, K. A. 1890 A, p. 304.

Platax sp. indet.

Gibbes, R. W. 1850 A, p. 77.
1850 G, p. 300, pl. xlii, figs. 11–13.
Pliocene; South Carolina.

Superfamily PERCOIDEA Gill.

Gill, T. 1893 A, p. 134.

APHREDODERIDÆ.

Cope, E. D. 1870 H, p. 380. (Asineopidæ.)
1877 AA. (Asineopidæ.)
1884 O, p. 79 (Aphododeridæ); p. 85 (Asineopidæ).
Günther, A. 1859 A, p. 271.
Günther, A. 1880 A, p. 396.
Jordan and Evermann 1896 A, p. 785.
Nicholson and Lydekker 1889 A, p. 1014. (Aphredodiridæ, Asineopidæ.)
Zittel, K. A. 1890 A, p. 296. (Percidæ, in part.)

AMPHIPLAGA Cope. Type *A. brachyptera* Cope.

Cope, E. D. 1877 I, p. 812.
1884 O, p. 83.

Amphiplaga brachyptera Cope.

Cope, E. D. 1877 I, p. 812.
Cope, E. D. 1877 Z, p. 570.
1877 AA.
1884 O, p. 84.
Eocene (Green River); Wyoming.

ASINEOPS Cope. Type *A. squamifrons* Cope.

Cope, E. D. 1870 H, p. 380.
1871 E, p. 425.
1884 O, p. 84.
Leidy, J. 1871 C, p. 369.
Nicholson and Lydekker 1889 A, p. 1014.
Zittel, K. A. 1890 A, p. 299.

Asineops pauciradiatus Cope.

Cope, E. D. 1877 I, p. 813.
1877 AA.
1878 Z, p. 570.
Cope, E. D. 1884 O, p. 87, pl. xiv, fig. 1.
Eocene (Green River); Wyoming.

Asineops squamifrons Cope.

Cope, E. D. 1870 H, p. 381.
1871 E, p. 426. (A. squamifrons, A. viridensis.)
1884 O, p. 85, pl. ix, fig. 5; pl. xi.
King, C. 1878 A, p. 394. (A. squamifrons, A. viridensis.)
Leidy, J. 1871 C, p. 369.
Eocene (Green River); Wyoming.

TRICHOPHANES Cope. Type *T. hians* Cope.

Cope, E. D. 1872 P, p. 479.
1873 E, p. 641.
1879 N.
1884 O, pp. 79, 742, 752.
Osborn, Scott, and Speir 1878 A, p. 97.

Trichophanes copei. Osb., Sc. and Sp.

Osborn, Scott, and Speir, 1878 A, p. 98.
Cope, E. D. 1884 O, p. 752.
Oligocene; Colorado.

Trichophanes foliarum Cope.

Cope, E. D. 1878 F, p. 73.
1884 O, p. 753, pl. lix, fig. 4.
Oligocene; Colorado.

Trichophanes hians Cope.

Cope, E. D. 1872 P, p. 481.
1872 MM, p. 775.
1873 E, p. 642.
1884 O, p. 753, pl. lix, fig. 3.
Oligocene; Nevada.

ERISMATOPTERUS Cope. Type *E. ricksecceri* Cope.

Cope, E. D. 1871 E, p. 427.
1884 O, p. 80.
Zittel, K. A. 1890 A, p. 296.

Erismatopterus endlichii Cope.

Cope, E. D. 1877 I, p. 811.
1877 Z, p. 570.
1877 AA.
1884 O, p. 82, pl. xii, fig. 5.
Eocene (Green River); Wyoming.

Erismatopterus levatus Cope.

Cope, E. D. 1870 H, p. 382. (Cyprinodon.)
1871 E, p. 428.
1884 O, p. 80, pl. ix, figs. 6, 7.
Leidy, J. 1871 C, p. 369. (Cyprinodon.)
Eocene (Green River); Wyoming.

Erismatopterus rickseckeri Cope.

Cope, E. D. 1871 E, p. 427.
1884 O, p. 81, pl. vi, fig. 2.
Leidy, J. 1872 B, p. 372.
Eocene (Green River); Wyoming.

PERCIDÆ.

Agassiz, L. 1845 A, p. 286. (Percoidæ.)
Bridge, T. W. 1896 A, p. 564.
Brühl, B. C. 1847 A. ("Percoïden.")
Cope, E. D. 1872 C, p. 342.
1883 A.
Gill, T. 1872 C, p. 11.
Günther, A. 1859 A, p. 51.
1880 A, p. 375.
1881 A, p. 688.
Jordan and Evermann 1896 A, p. 1015.
Kölliker. A. 1859 A. (Percoidei, part.)
Nicholson and Lydekker 1889 A, p. 1013.
Owen, R. 1845 B, p. 88. ("Percoids.")
1866 A, p. 11 *et seq.*
Parker, W. K. 1868 A, p. 52.
Reis, O. M. 1895 C.
Segond, L. A. 1873 B, p. 528. ("Percoïdes.")
Zittel, K. A. 1890 A, p. 293.

MIOPLOSUS Cope. Type *M. abbreviatus* Cope.

Cope, E. D. 1877 I, p. 813.
1884 O, p. 88.
Nicholson and Lydekker 1889 A, p. 1013.
Zittel, K. A. 1890 A, p. 294.

Mioplosus abbreviatus Cope.

Cope, E. D. 1877 I, p. 813.
1877 Z, p. 570.
1877 AA.
Cope, E. D. 1884 O, p. 88.
Eocene (Green River); Wyoming.

Mioplosus beani Cope.

Cope, L. D. 1877 I, p. 816.
1877 Z, p. 570.
1877 AA.
1884 O, p. 91, pl. xii, fig. 3.
Eocene (Green River); Wyoming.

Mioplosus labracoides Cope.

Cope, E. D. 1877 I, p. 814.
1877 Z, p. 570.
1877 AA.
1884 O, p. 89, pl. xii, fig. 1.
Eocene (Green River); Wyoming

Mioplosus longus Cope.

Cope, E. D. 1877 I, p. 815.
1877 Z, p. 570.
1877 AA.
Cope, E. D. 1884 O, p. 90, pl. xii, fig. 2.
Eocene (Green River); Wyoming.

Mioplosus multidentatus Cope.

Cope, E. D. 1891 H, p. 657.
1892 B, p. 285.
Tertiary (Oligocene?); South Dakota.

Mioplosus sauvageanus Cope.

Cope, E. D. 1884 O, p. 92.
Eocene (Green River); Wyoming.

PLIOPLARCHUS Cope. Type *P. whitei* Cope.

Cope, E. D. 1883 A, p. 414.
1884 O, p. 727.
Nicholson and Lydekker 1889 A, p. 1014.
Zittel, K. A. 1890 A, p. 296.

Plioplarchus septemspinosus Cope.

Cope, E. D. 1889 M, p. 625.
Tertiary, below John Day beds; Oregon

Plioplarchus sexspinosus Cope.

Cope, E. D. 1883 A, p. 416.
Cope, E. D. 1884 O, p. 729.
Upper Cretaceous or Lower Tertiary; South Dakota.

Plioplarchus whitei Cope.

Cope, E. D. 1883 A, p. 414.
1884 O, p. 728, pl. xxiv G, fig. 1.
Upper Cretaceous or Lower Tertiary; South Dakota.

OLIGOPLARCHUS Cope. Type *O. squamipinnis* Cope.

Cope, E. D. 1891 H, p. 656.

Oligoplarchus squamipinnis Cope.

Cope, E. D. 1891 H, p. 656.
Cope, E. D. 1892 B, p. 285.
Oligocene?; South Dakota.

SPARIDÆ.

Agassiz, L. 1845 A. p. 287. (Sparoidæ.)
Brühl, B. C. 1847 A. ("Sparoiden.")
Cope, E. D. 1872 C, p. 342.
Jordan and Evermann 1898 A, p. 1343.
Kölliker, A. 1859 A. (Sparoidei.)
Owen, R. 1845 B, p. 91. ("Sparoids.")
Segond, L. A. 1873 B, p. 534. ("Sparoïdes.")
Stannius, H. 1854 A. (Sparoidei.)

CROMMYODUS Cope. Type *Phacodus irregularis* Cope.

Cope, E. D. 1869 F, p. 243. (Substitute for Phacodus Cope, not of Dixon.)

Crommyodus irregularis Cope.

Cope, E. D. 1869 L, p. 311. (Phacodus.)
Cope, E. D. 1869 F, p. 243.
1875 H, p. 362.
Miocene; New Jersey.

Superfamily SCIÆNOIDEA Gill.

Gill, T. 1872 C, p. 10.

SCIÆNIDÆ.

Brühl, B. C. 1847 A. ("Sciænoiden.")
Günther, A. 1860 A, p. 265.
1880 A, p. 426.
Jordan and Evermann 1898 A, p. 1392.
Kolliker, A. 1859 A. (Sciænoidei.)
Owen, R. 1845 B, p. 100. ("Sciænoids.")
1866 A, p. 11 *et seq.*
Parker, W. K. 1868 A, p. 50.
Segond, L. A. 1873 B, pp. 531, 534. ("Scienoïdes.")
Stannius, H. 1854 A. (Sciænoidei.)

POGONIAS Lacépède. Type *P. fasciatus*=*Labrus cromis* Linn.

Lacépède, 1802, Hist. Nat. Poissons, iii, p. 138.
Günther, A. 1860 A, p. 269.
1880 A, p. 426.
Jordan and Evermann 1898 A, p. 1482.

Pogonias cromis (Linn.).

Linnæus, C., 1758, Syst. Nat., ed. x, p. 479. (Labrus.)
Günther, A. 1880 A, p. 27, fig. 187.

Jordan and Evermann 1898 A, p. 1482.
Leidy, J. H. 1855 C, p. 397. (P. chromis.)
Recent: Long Island Sound to N. Mexico
Sands of Ashley River; South Carolina.

Pogonias multidentatus Cope.

Cope, E. D. 1869 L, p. 310.
Miocene; Virginia.

Pogonias sp. indet.

Wyman, J. 1850 C, p. 234.
Eocene?; South Carolina.

Suborder PAREIOPLITEÆ Richardson.

Richardson, J., 1836, Fauna bor.-amer., iii, p. 36.
Gill, T. 1889 A, p. 589. (Acanthopterygii buccis loricatis.)
Günther, A. 1860, A, pp. 90, 211. (Cataphracti.)
Jordan & Evermann, 1898 A, p. 1756. (Loricati of Jenyns, 1835, not Loricata of Merrem, 1820.)

Superfamily SCORPÆNOIDEA Gill.

Gill, T. 1889 A, p. 589.
Gill, T. 1898 A, p. 135.

SCORPÆNIDÆ.

Gill, T. 1860 A, p. 95. (Scorpænina.)
1872 C, p. 6.
Günther, A. 1880 A, p. 412.
Sauvage, H. E. 1873 A, p. 726. (Scorpæni.)
Sauvage, H. E. 1878 B, p. 111.
Segond, L. 1873 B, p. 582. ("Scorpènea.")
Zittel, K. A. 1890 A, p. 300.

SEBASTODES Gill. Type *S. paucispinis* (Ayres).

Gill, T., 1861, Proc. Acad. Nat. Sci. Phila., p. 165.
Cramer, F. 1895 A, p. 573.
Gill, T., 1864, Proc. Acad. Nat. Sci. Phila., p. 145.
Jordan and Evermann 1898 A, p. 1765.
Sauvage, H. E. 1878 B, p. 112.

Sebastodes? rosæ Eigenmann.

Eigenmann, C. H. 1890 A, p. 17, fig. 1.
Tertiary; California.

Superfamily COTTOIDEA Gill.

Gill, T. 1872, C. p. 6.
1889 A, p. 589.
Gill, T. 1898 A, p. 135.

COTTIDÆ.

Bridge, T. W. 1896 A, p. 571.
Cope, E. D. 1872 C, p. 337.
Dareste, C. 1872 A, p. 1255. ("Poissons à joues cuirassées.")
Gill, T. 1872 C, p. 6.
1889 A.
1891 A, p. 362.
Günther, A. 1860 A, p. 152. (Cottina.)
1880 A, p. 476.
Jordan and Evermann 1898 A, p. 1879.
Nicholson and Lydekker 1889 A, p. 1006.
Owen, R. 1845 B, p. 90. ("Cottoids," in part.)
Parker, W. K. 1868 A, p. 48.
Sauvage, H. E. 1878 B, p. 111. (Scorpænidæ, in part; Cottini.)
Segond, L. A. 1873 B, p. 583. ("Cottes.")
Zittel, K. A. 1890 A, p. 310.

COTTUS Linn. Type C. *gobio* Linn.

Linnæus, C., 1758, Syst. Nat., ed. x, p. 264.
Günther, A. 1860 A, p. 154.
1880 A, p. 476.
Jordan and Evermann 1898 A, p. 1941.
Sauvage, H. E. 1878 B, p. 135.

Cottus cryptotremus Cope.

Cope, E. D. 1883 L, pp, 162, 163.
Pleistocene (Equus); Idaho.

Cottus divaricatus Cope.

Cope E. D. 1883 L, p. 162.
Pleistocene (Equus); Oregon.

Cottus hypoceras Cope.

Cope, E. D. 1883 L, pp. 162, 164.
Pleistocene (Equus); Oregon

Cottus pontifex Cope.

Cope, E. D. 1883 L, pp. 162, 163.
Pleistocene (Equus); Oregon.

ARTEDIELLUS Jordan. Type *Cottus uncinatus* Reinh.

Jordan, D. S., 1885, Cat. Fishes N. A., p. 110.
Jordan and Evermann 1898 A, p. 1905.

Artediellus atlanticus Jord. and Ev.

Jordan and Evermann 1898 A, p. 1906.
Dawson, J. W. 1877 B, p. 341. (Cottus sp.)
Dawson, J.W. 1890 A, p. 86. (Cottus uncinatus.)

This species is regarded by Jordan and Evermann as being closely related to the European *A. uncinatus*, but probably distinct.

Recent; Labrador to Cape Cod: Pleistocene; Canada.

Superfamily CYCLOPTEROIDEA Gill.

Gill, T. 1889 A, p. 589.
Garman, S. 1892 A. (Discoboli.)
1891 A, p. 361.
1898 A, p. 135.
Günther, A. 1861 A, p. 154. (Discoboli.)
1880 A, p. 483. (Discoboli.)
Hertwig, O. 1881 A. (Discoboli.)
Stannius, H. 1854 A. (Discoboli.)

CYCLOPTERIDÆ.

Jordan and Evermann 1896 A, p. 2094.
Garman, S. 1892 A, p. 19.
Gill, T. 1872 C, p. 5.
1891 A, p. 366.

CYCLOPTERUS Linn. Type *C. lumpus* Linn.

Linnæus, C., 1788, Syst. Nat., ed. xi, i, p. 260.
Garman, S. 1892 A, p. 20.
Gill, T. 1891 A, p. 368.
Günther, A, 1861 A, p. 154.
1880 A, p. 484.
Jordan and Evermann 1898 A, p. 2096.

Cyclopterus lumpus Linn.

Linnæus, C., 1788, Syst. Nat., ed. xi, i, p. 260.
Dawson, J. W. 1877 B, p. 341.
1890 A, p. 86.
Garman, S. 1892 A. p. 21, pl. viii, figs. 1-8, 15-17; pl. ix, fig. 2; pl. x, fig. B; pl. xi, fig. 10; pls. xii, xiii.
Gill, T. 1891 A, p. 368, pls. xxvii, xxx.
Günther, A. 1861 A, p. 155.
1880 A, p. 484, figs. 218, 219.
Jordan and Evermann 1898 A, p. 2096.
Logan, W. E. 1863 A, p. 917.

Recent; eastern and western shores of northern Atlantic: Pleistocene; Ontario, Canada.

Order PLECTOGNATHI.

Cope, E. D. 1872 C, p. 340.
Dareste, C. 1849 A. ("Plectognathes.")
1872 A, p. 1019. ("Plectognathes.")
Gill, T. 1872 C, pp. xl, 1.
1884 D, p. 411.
1893 A, p. 137.
Günther, A. 1870 A, p. 207.
1880 A, p. 683.
Haeckel, E. 1895 A, p. 236.
Hertwig, O. 1881 A.
Hollard, H. 1860 A.
Klein, E. F. 1881 A.
1886 A.
Müller, J. 1846 C, p. 202.
Nicholson and Lydekker 1889 A, p. 1014.
Owen, R. 1866 A, p. 11 *et seq.*
Parker, W. K. 1868 A, p. 33.
Reis, O. M. 1895 C, p. 163.
Stannius, H. 1854 A.
Stephan, P. 1900 A. ("Plectognathes.")
Zittel, K. A. 1890 A, p. 256.

Suborder SCLERODERMI.

Agassiz, L. 1843 B, ii, pp. 248, 265. ("Sclérodermes.")
Gill, T. 1872 C, p. 1.
1884 D, p. 414.
1893 A, p. 137.
Günther, A. 1870 A, p. 207.
1880 A, p. 684.
Hollard, H. 1860 A, p. 31. ("Sclérodermes.")
Jordan and Evermann 1896 A, p. 781.
1898 A, p. 1697.
Müller, J. 1846 C, p. 122.
Owen, R. 1845 B, p. 82. ("Sclerodermes.")
1866 A, p. 11.
Zittel, K. A. 1890 A, p. 258.

BALISTIDÆ.

Brühl, B. C. 1847 A. (Balistes.)
Cope, E. D. 1872 C, p. 20.
Dareste, C. 1872 A, p. 1174. ("Balistes."
Gill, T. 1872 C, p. 1.
1884 D, p. 416.
1893 A, p. 137.
Hollard, H. 1853 A, p. 71. ("Balistides.")
Hollard, H. 1854 A, p. 39. ("Balistides.")
1860 A, p. 23. ("Balistides.")
Kölliker, A. 1859 A. (Balistini.)
Owen, R. 1846 B, p. 82. (Genus Balistes.)
Parker, W. K. 1868 A, pp. 33, 51.
Stannius, H. 1854 A. (Balistini.)
Stephan, P. 1900 A. (Balistides.)

GRYPODON Hay. Type *Ancistrodon texanus* Dames.

Hay, O. P. 1899 E, p. 790.

The following authors employ the name *Ancistrodon*. It is practically preoccupied.

Dames, W. 1883 A, p. 664.

Nicholson and Lydekker 1889 A, p. 1016.

Roemer, F. 1849 A, p. 419.

1852 A, p. 30.

Schlüter, C. 1881 A, p. 61.

Woodward and Sherborn 1890 A, p. 10.

Zittel, K. A. 1890 A, p. 259.

Grypodon texanus (Dames).

Dames, W. 1883 A, p. 664. (Ancistrodon.)

Hay, O. P. 1899 E, p. 790. (Grypodon.)

Roemer, F. 1849 A, p. 419. (No specific name.)

1852 A, p. 30, pl. i, fig. 10. (No specific name.)

Woodward, A. S. 1888 I, p. 330. (Ancistrodon.)

Cretaceous; Texas.

Suborder GYMNODONTES.

Agassiz, L. 1843 B, ii, p. 268. ("Gymnodontes.")

Dareste, C. 1849 A.

Gill, T. 1872 C, p. 1.

1884 D, p. 418.

1893 A, p. 138.

Günther, A. 1870 A, pp. 207, 269.

Hollard, H. 1857 A.

1860 A.

Kölliker, A. 1859 A.

Müller, J. 1846 C, p. 203.

Stannius, H. 1854 A.

Superfamily DIODONTOIDEA Gill.

Gill, T. 1884 D, p. 423.

Gill, T. 1893 A, p. 138.

DIODONTIDÆ.

Cope, E. D. 1872 C, p. 340.

Gill, T. 1884 D, p. 423.

Günther, A. 1870 A, p. 269. (Tetrodontina.)

1880 A, p. 686. (Gymnodontes.)

Hollard, H. 1857 A. ("Diodoniens.")

Jordan and Evermann 1898 A, p. 1742.

Nicholson and Lydekker 1889 A, p. 1015.

Owen, R. 1845 B, p. 77.

DIODON Linn. Type *D. hystrix* Linn.

Linnæus, C., 1758, Syst. Nat., ed. x, p. 335.

Agassiz, L. 1843 B, ii, p. 273.

Bridge, T. W. 1896 A, p. 582.

Dareste, C. 1849 A.

Günther, A. 1870 A, p. 306.

1880 A, p. 689.

Jordan and Evermann 1898 A, p. 1744.

Owen, R. 1845 B, pp. 14, 77, pl. xxxviii, figs. 1, 2; pl. xxxix, fig. 2.

1866 A, p. 39.

Parker, W. K. 1868 A, p. 52.

Pictet, F. J. 1854 A, p. 123.

Zittel, K. A. 1890 A, p. 257.

Diodon vetus Leidy.

Leidy, J. 1855 C, p. 397.

Cope, E. D. 1871 M, p. 210. (D. antiquus.)

1875 V, p. 31, pl. viii, fig. 6. (D. antiquus.)

Leidy, J. 1877 A, p. 255, pl. xxxiv, figs. 15, 16.

Phosphate beds; South Carolina: Miocene; North Carolina.

Dr. E. Koken, in Zeitschrift deutchen geolog. Gesellsch., vol. xl, pp. 274–305, pls. xvii–xix, has described, from the Tertiary deposits of Alabama and Mississippi, the following list of otolites of fishes, designating the families, in some cases the genera, to which these otolites probably belonged. The word Otolithus being evidently not regarded as a generic name, the specific names have no standing in the system of nomenclature.

On the subject of the otolites of fishes see also Higgins, E. T. 1867 A., and Koken, E. 1891 A.

Otolithus (*Carangidarum*) *americanus* Kok., p. 277, pl. xix, figs. 1–3.
Otolithus (*Apogonidarum*) *hospes* Kok., p. 278, pl. xviii, fig. 15.
Otolithus (*Pagelli*) *elegantulus* Kok., p. 279, pl. xvii, figs. 5, 6.
Otolithus (*Sparidarum*) *insuetus* Kok., p. 280, pl. xvii, fig. 9.
Otolithus (*Sciaenidarum*) *radians* Kok., p. 280, pl. xix, figs. 7, 8.
Otolithus (*Sciaenidarum*) *gemma* Kok., p. 281, pl. xix, figs. 9–13.
Otolithus (*Sciaenidarum*) *eporrectus* Kok., p, 282, pl. xviii, figs. 16, 17.
Otolithus (*Sciaenidarum*) *claybornensis* Kok., p. 283, pl. xix, figs. 1–4.
Otolithus (*Sciaenidarum*) *intermedius* Kok., p. 283, pl. xix, figs. 2, 3.
Otolithus (*Sciaenidarum*) *similis* Kok., p. 284, pl. xix, figs. 10, 11, 14.
Otolithus (*Sciaenidarum*) *decipiens* Kok., p. 285, pl. xix, figs. 5, 6.
Otolithus (*Trachini*) *lævigatus* Kok., p. 286, pl. xviii, figs. 13, 14.
Otolithus (*Cottidarum*) *sulcatus* Kok., p. 287, pl. xviii, fig. 12.
Otolithus (*Triglae*) *cor* Kok., p. 287, pl. xviii, fig. 10.

Otolithus (*Cepolæ*) *comes* Kok., p. 288, pl. xvii, fig. 12.
Otolithus (*Mugilidarum*) *debilis* Kok., p. 288, pl. xvii, fig. 8.
Otolithus (*Gadidarum*) *meyeri* Kok., p. 289, pl. xviii, figs. 8, 9.
Otolithus (*Gadidarum*) *elevatus* Kok., p. 290, pl. xviii, figs. 4, 5.
Otolithus (*Gadidarum*) *mucronatus* Kok., p. 290, pl. xvii, figs. 10, 11.
Otolithus (*Platessæ*) *sector* Kok., p. 292, pl. xvii, figs. 14–16.
Otolithus (*Solæ*) *glaber* Kok., p. 293, pl. xviii, fig. 3.
Otolithus (*Congeris*) *brevior* Kok., p. 293, pl. xviii, fig. 7.
Otolithus (inc. sedis) aff. *umbonata* Kok., p. 294.

Class BATRACHIA Macartney.

Macartney, J., 1802, Lectures on Comp. Anat., i. tab. 3.
This class of animals is designated by some of the following authors *Batrachia;* by others, *Amphibia*.
Baur, G. 1886 B, p. 360.
1888 C, p. 2.
1896 C, p. 664.
Beard, J. 1890 A.
Born, G. 1876 A
1880 A.
Boulenger, G. A. 1892 A.
1892 B.
Calori, L. 1894 A.
Cope, E. D. 1868 J.
1869 M, p. 3.
1875 D.
1879 A, p. 33.
1884 I, p. 44.
1884 O, p. 100.
1884 P.
1884 HH.
1885 G.
1887 S, p. 331.
1888 H.
1888 O.
1888 AA, p. 244.
1889 D.
1889 R, p. 860.
1891 N, p. 28.
1892 D, p. 211.
1892 N.
1898 B, p. 43.
Cuvier, G. 1834 A, x, pp. 265, 386, pls. cclii–cclv.
Gadow, H. 1896 A.
1898 A, p. 12.
Gaupp, E. 1891 A.
1894 A.
1900 A.
Gegenbaur, C. 1865 B, p. 52.
1876 A.
1898 A.
Gill, T. 1900 A, p. 730.
Goeppert, E. 1895 B.
1896 A.
Haeckel, E. 1895 A, p. 266.
Hancock and Atthey 1868 A, p. 266.
Hasse, C. 1893 A.
Hay, O. P. 1895 A.
1899 F, p. 682.
Hoffmann, C. K. 1874 A.
1876 A.
1878 A.
Howes, G. B. 1888 A.
1888 B.
Huxley, T. H. 1867 B.
1870 A.
1872 A, p. 149.
1875 A.
1875 C.
1876 B, xiii, pp. 411, 429.
Kehrer, G. 1886 A, p. 73.
Kingsley and Ruddick 1900 A, p. 227.
Köstlin, O. 1844 A.
Levy, H. 1898 A.
Leydig, F. 1876 A.
Lydekker, R. 1890 A, p. 121.
Marsh, O. C. 1877 E.
1898 B, p. 408.
Müller, J. 1831 A, p. 199. (Nuda.)
Nicholson and Lydekker 1889 A, p. 1018.
Osborn, H. F. 1899 I, p. 156.
Owen, R. 1842 A, p. 181.
1845 B, p. 187.
1860 A, pp. 154, 160.
1866 A.
Parker, W. K. 1868 A, p. 58.
1879 B, pp. 31, 61.
Peters, K. 1895 A.
Stannius, H. 1856 A. (Amphibia dipnoa.)
Steinmann and Döderlein 1890 A, p. 601.
Walter F. 1887 A.
Wiedersheim, R. 1876 A.
1887 A.
1889 A, p. 432.
1890 A, p. 19.
Woodward, A. S. 1898 B, p. 122.
Zittel, K. A. 1890 A, pp. 337, 432.
Zwick, W. 1897 A.

Order STEGOCEPHALI Cope.

Cope, E. D. 1868 J, p. 209.
Baur, G. 1886 H.
1886 M, p. 304.
1889 F, p. 469.
1894 A.
1896 C.
Burkhardt, R. 1895 A.
Cope, E. D. 1869 M, p. 6.
1875 D, pp. 352–356.
1875 X, p. 10.
1884 P, p. 26.
1885 G, p. 243.

Cope, E. D. 1887 S. (Rhachitomi, Embolomeri, Stegocephali.)
1888 V.
1888 AA, p. 248.
1889 R, p. 861.
1891 N, p. 28.
1892 Z.
1895 C, p. 856.
1898 B, p. 43.
Credner, H. 1881 A.
1882 A.
1883 A.
1885 A.
1886 A.
1887 A.
1888 A, p. 555.
1889 A.
1890 A.
1893 A.
Fraas, E. 1889 A, p. 8.
Fritsch, A. 1883 A (1879), p. 68.
Gadow, H. 1896 A, p. 23.
1898 A, p, 12.
Gaupp, E. 1894 A.
1895 B, p. 56.
Gegenbaur, C. 1895 A, p. 8.
Gegenbaur, C. 1898 A.
Geinitz and Deichmüller 1882 A.
Goeppert, H. 1896 A, p. 431.
Haeckel, E. 1895 A, p. 273.
Hay, O. P. 1899 F, p. 682.
Jaekel, O. 1896 B, p. 129.
Kehner, F. A. 1876 A.
Lortet, L. 1892 A, p. 125.
Lydekker, R. 1890 A, p. 139. (Labyrinthodontia.)
Maggi, L. 1898 A.
Miall, L. C. 1874 A. (Labyrinthodonta.)
1875 A. (Labyrinthodonta.)
Nicholson and Lydekker 1889 A, p. 1021. (Labyrinthodontia.)
Osborn, H. F. 1899 I, p. 157.
1900 A, p. 4.
Pollard, H. B. 1892 A, p. 408.
Röse, C. 1897 A, p. 48.
Rohon, J. V. 1899 B, p. 13. ("Stegocephalen.")
Seeley, H. G. 1888 D, p. 95. (Labyrinthodontia.)
1892 A, p. 333. (Labyrinthodontia.)
Steinmann and Döderlein 1890 A, p. 603.
Wiedersheim, R. 1878 A, p. 38.
Woodward, A. S. 1898 B, p. 123. (Stegocephalia.)
Zittel, K. A. 1890 A, p. 344.

Suborder MICROSAURIA Cope.

Cope, E. D. 1868 J, p. 210.
Baur, G. 1897 B.
Case, E. C. 1898 B, p. 505.
Cope, E. D. 1868 J, p. 210. (Xenorhachia.)
1869 M, pp. 6, 8. (Microsauria, Xenorhachia.)
1875 D, p. 356. (Microsauria, Xenorhachia.)
1882 B, p. 452.
1888 V. (Lepospondyli.)
1889 D, p. 13. (Stegocephali.)
1889 R, p. 861.
1891 N, pp. 28, 30.
1898 B, pp. 43, 47.
Dawson, J. W. 1892 A.
1895 A, p. 73.
Fraas, E. 1889 A, p. 8. (Lepospondyli.)
Fritsch, A. 1883 A (1879), pp. 33, 58. (Microsauria aistopoda.)
Fritsch, A. 1889 B (1885), p. 73.
Fürbringer, M. 1900 A, p. 284.
Gadow, H. 1898 A, p. 12. (Lepospondyli.)
Haeckel, E. 1895 A, p. 268 (Lepospondyli); p. 274 (Progonamphibia).
Hay, O. P. 1895 A, p. 45. (Lepospondyli.)
Lydekker, R. 1890 A, p. 196 (Microsauri); p. 205 (Aistopoda); p. 205 (Branchiosauria).
Miall, L. C. 1890 A, p. 151. (Microsauria, Aistopoda, Nectridia, Heleothrepta.)
Nicholson and Lydekker 1889 A, p. 1025.
Osborn, H. F. 1899 I, p. 156.
Wiedersheim, R. 1878 A, p. 39.
Woodward, A. S. 1898 B, p. 127 (Branchiosauria); p. 129 (Aistopoda); p. 130 (Microsauria).
Zittel, K. A. 1890 A, p. 370. (Lepospondyli.)

PROTRITONIDÆ.

Nicholson and Lydekker 1889 A, pp. 1022, 1039.

Unless otherwise indicated the following authors refer to this family under the name *Branchiosauridæ*. If *Pelion* really belongs to this family the family name should be *Peliontidæ*. References to *Branchiosaurus* are also added.

Baur, G. 1888 C, p. 63. (Branchiosaurus.)
Cope, E. D. 1875 X, p. 11. (Peliontidæ.)
Credner, H. 1881 A. (Branchiosaurus.)
1881 B. (Branchiosaurus.)
1883 A. (Branchiosaurus.)
1884 A. (Branchiosaurus.)
Credner, H. 1887 A. (Branchiosaurus.)
Fritsch, A 1876, A, p. 72. (Branchiosaurus.)
1883 A (1879), p. 69.
1883 A (1880), p. 93.
Gadow, H. 1896 A, p. 23. (Branchiosaurus.)
Gaudry, A. 1883 A, p. 253. (Protriton, Branchiosaurus.)
Hay, O. P. 1895 A, p. 45.
Jaekel, O. 1896 A, p. 1. (Branchiosaurus.)
Lydekker, R. 1890 A, p. 210. (Protritonidæ.)
Maggi, L. 1898 A, figs. 1, 3. (Branchiosaurus.)
Zittel, K. A. 1890 A, p. 370.

SPARODUS Fritsch. Type *S. validus* Fritsch.

Fritsch, A. 1876 A, p. 73.
Dawson, J. W. 1882 A, p. 643, pl. xl, figs. 52–56.
1895 A, p. 75.
Fritsch, A. 1876 A, p. 76. (Batrachocephalus, preoccupied.)
1883 A (1879), p. 84.
Gadow, H. 1896 A, p. 28.
Lydekker, R. 1890 A, p. 212.
Zittel, K. A. 1890 A, p. 375.

It is doubtful to which family this genus belongs.

Sparodus sp. indet.

Dawson, J. W. 1895 A, p. 75.
Coal-measures; Nova Scotia.

AMPHIBAMUS Cope. Type *A. grandiceps* Cope.

Cope, E. D. 1865 A.
Baur, G. 1888 C, p, 68.
Cope, E. D. 1866 C.
1869 M, pp. 7, 8.
Fritsch, A. 1883 A (1879), p. 60.
Miall, L. C. 1875 A, p. 181.
Miller, S. A. 1889 A, p. 618.
Zittel, K. A. 1890 A, p. 375.

This genus may belong among the *Hylonomidæ*.

Amphibamus grandiceps Cope.

Cope, E. D. 1865 A.
1866 C, p. 135, pl. xxxii and text figure.
1869 M, p. 8.
Dana, J. D. 1896 A, p. 683, fig. 1108.
Fritsch, A. 1883 A (1880), p. 93, fig. 44.
Hay, O. P. 1900 A, p. 120.
Miller, S. A. 1889 A, p. 618, fig. 1178.
Coal-measures; Illinois.

PELION Wyman. Type *P. lyellii* Wyman.

Wyman, J., in Cope, E. D. 1868 J., p. 211. (To replace *Raniceps* Wyman, preoccupied by Cuvier and Kirby.)
Cope, E. D. 1869 M, p. 9.
1874 L, p. 269.
1875 D, p. 389.
1875 X, p. 11.
1880 A, p. 50.
Fritsch, A. 1883 A (1879), p. 64.
Huxley, T. H. 1863 A, p. 67. (Raniceps.)
Miall, L. C. 1875 A, p. 189.
Miller, S. A. 1889 A, p. 624.
Wyman, J. 1858 A, p. 160. (Raniceps.)
Zittel, K. A. 1890 A, p. 375.

Pelion lyellii Wyman.

Wyman, J. 1858 A, p. 160, fig. 1. (Raniceps.)
Cope, E. D. 1869 M, p. 9.
1874 L, p. 269.
1875 D, p. 390, pl. xxvi, fig. 1.
Dana, J. D. 1896 A, p. 683, fig. 1109.
Fritsch, A, 1883 A (1879), p. 94, fig. 45.
Gaudry, A, 1875 A.
Lesley, J. P. 1889 A, p. 613, figure.
Miller, S. A. 1889 A, p. 624, fig. 1190.
Newberry, J. S. 1868 A, p. 144. (Raniceps.)
Wyman, J., in Cope, E. D. 1868 J, p. 211.
Coal-measures; Ohio.

MOLGOPHIDÆ.

Cope, E. D. 1875 D, p. 357.
1875 D, p. 357. (Phlegethontiidæ.)
1875 X, p. 11. (Phlegethontiidæ, Molgophidæ.)
Fritsch, A. 1876 A, p. 72. (Genus Dolichosoma.)
1883 A (1879), p. 107. (Aistopoda.)
Lydekker R. 1890 A, p. 205. (Dolichosomatidæ.)
Miall, L. 1875 A, pp. 151, 171. (Aistopoda.)
Nicholson and Lydekker 1889 A, p. 1024. (Dolichosomatidæ.)
Wiedersheim, R. 1878 A, p. 42. (Phlegethontiidæ, Molgophidæ.)
Zittel, K. A. 1890 A, p. 388. (Aistopoda.)

PHLEGETHONTIA Cope. Type *P. linearis* Cope.

Cope, E. D. 1871 L.
1872 JJ.
1874 L, p. 262.
1875 D, pp. 357, 366.
Fritsch, A. 1883 A (1879), p. 64.
Miall, L. C. 1875 A, p. 190.
Miller, S. A. 1889 A, p. 624.
Nicholson and Lydekker 1889 A, p. 1024.
Zittel, K. A. 1890 A, p. 388.

Phlegethontia linearis Cope.

Cope, E. D. 1871 L.
1874 L, p. 262.
1875 D, p. 367, pl. xliii, figs. 1, 2.
Fritsch, A. 1883 A (1879), p. 107, fig. 54.
Lesley, J. P. 1889 A, p. 634, figure.
Miller, S. A. 1889 A, p. 624, fig. 1191.
Coal-measures; Ohio.

Phlegethontia serpens Cope.

Cope, E. D. 1874 L, 263.
1871 L. (No description.)
1875 D, p. 367, pl. xxxii, fig. 2.
Fritsch, A. 1883 A (1879), p. 107, fig. 53.
Lesley, J. P. 1889 A, p. 635, figure.
Coal-measures; Ohio.

MOLGOPHIS Cope. Type *M. macrurus* Cope.

Cope, *E. D.* 1868 J, p. 220.
1869 M, p. 20.
1874 L, p. 263.
1875 D, p. 368.
Fritsch, A. 1883 A (1879), p. 63.
Miall, L. C. 1875 A, p. 188.
Miller, S. A. 1889 A, p. 623.
Nicholson and Lydekker 1889 A, p. 1024.
Zittel, K. A. 1890 A, p. 383.

Molgophis brevicostatus Cope.

Cope, *E. D.* 1875 D, p. 369, pl. xliv, fig. 1.
Fritsch, A. 1883 A (1879), p. 107, fig. 55.
Miller, S. A. 1889 A, p. 623, fig. 1188.
Coal-measures; Ohio.

Molgophis macrurus Cope.

Cope, *E. D.* 1868 J, p. 220.
1869 M, p. 21.
1875 D, p. 368, pl. xliii, fig. 3.
Wyman, J. 1858 A, p. 160, fig. 1. (No name. May be not this species.)
Coal-measures; Ohio.

Molgophis wheatleyi Cope.

Cope, *E. D.* 1874 L, p. 263.
1875 D, p. 369, pl. xlv, fig. 1.
Coal-measures; Ohio.

HYLONOMIDÆ.

Fritsch, *A.* 1883 A, p. 159.
Lydekker, R. 1890 A, p. 201.
Nicholson and Lydekker 1889 A, p. 1027. (Hyloplesionidæ.)
Steinmann and Döderlein 1890 A, p. 608.

HYLONOMUS Dawson. Type *H. lyelli* Dawson.

Dawson, *J. W.* 1860 A, p. 274.
Baur, G. 1897 B.
Cope, E. D. 1871 A, p. 9.
Credner, H. 1885 A, p. 274.
1890 A.
Dawson, J. W. 1863 A, pp. 430, 446.
1863 B.
1863 D, pp. 160, 163, 281.
1868 A, p. 370.
1882 A, p. 634.
1891 B, p. 154.
1894 A, p. 279.
1895 A, p. 73.
Fritsch, A. 1883 A (1879), p. 59.
1883 A (1883), p. 159 (Hylonomus); p. 160 (Hyloplesion).
Fürbringer, M. 1900 A, pp. 286, 296, 554.
Gadow, H. 1896 A, p. 28.
Huxley, T. H. 1863 A, p. 67.
Lydekker, R. 1890 A, p. 201.
Miall, L. C. 1875 A, p. 173.
Miller, S. A. 1889 A, p. 622.
Nicholson and Lydekker 1889 A, p. 1027.
Steinmann and Döderlein 1890 A, p. 608.
Woodward, A. S. 1898 B, p. 131. (Hyloplesion, Hylonomus.)
Zittel, K. A. 1890 A, p. 376.

Hylonomus latidens Dawson.

Dawson, *J. W.* 1882 A, p. 637, pl. xxxix, figs. 18–22.
1895 A, p. 74.
Lydekker, R. 1890 A, p. 224.
Coal-measures; Nova Scotia.

Hylonomus lyelli Dawson.

Dawson, *J. W.* 1860 A, p. 274, figs. 14–18.
Cope, E. D. 1871 A, p. 9.
Dawson, J. W. 1862 A.
1863 A, pp. 430, 446.
Dawson, J. W. 1863 C, p. 439.
1863 D, pp. 167, 281, pls. iv, figs. 23–31; pl. v, figs. 1–29.
1868 A, p. 370, fig. 144.
1878 A, p. 370; suppl., p. 61.
1882 A, p. 635, pl. xxxix, figs. 1–14; pl. xlv, fig. 140.
1891 A, pl. viii.
1891 B, p. 149.
1894 A, p. 279.
1894 B, p. 6.
1895 A, p. 74.
Lesley, J. P. 1889 A, p. 290, figures.
Lydekker, R. 1890 A, p. 222.
Miall, L. C. 1875 A, p. 173.
Owen, R. 1862 A, p. 238, pl. ix, figs. 1–5.
Coal-measures; Nova Scotia.

Hylonomus multidens Dawson.

Dawson, *J. W.* 1882 A, p. 637, pl. xxxix, figs 23–26.
1895 A, p. 74.
Coal-measures; Nova Scotia.

Hylonomus wymani Dawson.

Dawson, *J. W.* 1860 A, p. 277, figs. 27–29.
Cope, E. D. 1871 A, p. 9.
Dawson, J. W. 1862 A.
1863 A, p. 430.
1863 C, p. 439.
1863 D, pp. 270, 282, pl. vi, figs. 18–31.
1868 A, p. 378, figs. 146*a–i*.
1878 A, p. 378, figs. 146*a–i*.
1882 A, p. 637, pl. xxxix, figs. 15–17.
1894 A, p. 279.
1895 A, p. 74.
Lesley, J. P. 1889 A, p. 291, figure.
Lydekker, R. 1890 A, 224.
Miall, L. C. 1875 A, p. 174.
Owen, R. 1862 A, p. 240, pl. ix, figs. 11–15.
Coal-measures; Nova Scotia.

SMILERPETON Dawson. Type *Hylonomus aciedentatus* Dawson.

Dawson, J. W. 1882 A, p. 634.
1894 A, p. 279.
1895 A, p. 74.
Gadow, H. 1896 A, p. 28.
Lydekker, R. 1890 A, p. 224. (Smilerpetum.)
Nicholson and Lydekker 1889 A, p. 1027.
Zittel, K. A. 1890 A, p. 376.

Smilerpeton aciedentatum Dawson.

Dawson, J. W. 1860 A, p. 275, figs. 19–23. (Hylonomus.)
Cope, E. D. 1871 A, p. 9. (Hylonomus.)
Dawson, J. W. 1862 A. (Hylonomus.)
1863 B, p. 473. (Hylonomus.)
1863 C, p. 439. (Hylonomus.)
Dawson, J. W. 1863 D, pp. 268, 287, pl. vi, figs. 1–16. (Hylonomus.)
1868 A, p. 376, fig. 145*a–i*. (Hylonomus.)
1878 A, p. 376, figs. 145*a–i*. (Hylonomus.)
1882 A, p. 638, pl. xl, figs. 28–45.
1894 A, p. 279.
1895 A, p. 75.
Lesley, J. P. 1889 A, p. 289, figure. (Hylonomus.)
Lydekker, R. 1890 A, p. 224. (Smilerpetum.)
Miall, L. C. 1875 A, p. 174.
Miller, S. A. 1889 A, p. 622, fig. 1186. (Hylonomus.)
Owen, R. 1862 A, p. 239, pl. ix, fig. 6.
Coal-measures; Nova Scotia.

HYLERPETON Owen. Type *H. dawsonii* Owen.

Owen, R. 1862 A, p. 241.
Dawson, J. W. 1876 A, p. 443.
1878 A, suppl., p. 58.
1882 A, p. 634.
1895 A, p. 74.
Fritsch, A. 1883 A (1879), p. 59.
Huxley, T. H. 1863 A, p. 67.
Lydekker, R. 1890 A, p. 224. (Hylerpetum.)
Miall, L. C. 1875 A, p. 174.
Miller, S. A. 1889 A, p. 622.
Zittel, K. A. 1890 A, p. 376.

Hylerpeton dawsonii Owen.

Owen, R. 1862 A, p. 241, pl. ix.
Cope, E. D. 1869 M, p. 18.
Dawson, J. W. 1863 A, p. 481.
1863 B, p. 473.
1863 C, p. 439.
1863 D, pp. 272, 282, pl. vi, figs. 32–46.
1868 A, p. 380, fig. 147.
1876 A, pp. 442, 443.
1878 A, p. 380, figs. 147*a–d*; suppl., p. 58.
Dawson, J. W. 1882 A, p. 639, pl. xli, figs. 62–85.
1894 B, p. 6.
1895 A, p. 74.
Gadow, H. 1896 A, p. 28.
Lesley, J. P. 1889 A, p. 289, figure.
Lydekker, R. 1890 A, p. 225.
Miall, L. C. 1875 A, p. 194.
Miller, S. A. 1889 A, p. 622, fig. 1185.
Coal-measures; Nova Scotia.

Hylerpeton intermedium Dawson.

Dawson, J. W. 1895 A, p. 75.
Coal-measures; Nova Scotia.

Hylerpeton longidentatum Dawson.

Dawson, J. W. 1876 A, p. 444.
1878 A, suppl., p. 58.
1882 A, p. 640, pl. xlii, figs. 86–109.
1894 B, p. 6.
1895 A, p. 74.
Lydekker, R. 1890 A, p. 225.
Coal-measures; Nova Scotia.

FRITSCHIA Dawson. Type *Hylerpeton curtidentatum* Dawson.

Dawson, J. W. 1882 A. p. 634.
1895 A, p. 75.
Lydekker, R. 1890 A, p. 225.
Zittel, K. A. 1890 A, p. 381.

Fritschia curtidentata Dawson.

Dawson, J. W. 1876 A, p. 444. (Hylerpeton.)
Dawson, J. W. 1878 A, suppl., p. 59. (Hylerpeton.)
1882 A, p. 641, pl. xliii, figs. 110–128.
1895 A, p. 75.
Lydekker, R. 1890 A, p. 225.
Coal-measures; Nova Scotia.

BRACHYDECTES Cope. Type *B. newberryi* Cope.

Cope, E. D. 1868 J, p. 214.
1869 M, p. 14.
1874 L, p. 268.
1875 D, pp. 357, 388.
Dawson, J. W. 1891 B, p. 158.
Fritsch A. 1883 A (1879), p. 61
Miall, L. C. 1875 A, p. 184.
Miller, S. A. 1889 A, p. 619.
Zittel, K. A. 1890 A, p. 377.

Brachydectes newberryi Cope.

Cope, E. D. 1868 J, p. 214.
1869 M, p. 14.
1874 L, p. 269.
1875 D, p. 388, pl. xxvii, fig. 1.
Miall, L. C. 1875 A, p. 184.
Miller, S. A. 1889 A, p. 619, fig 1180.
Coal-measures; Ohio.

PTYONIIDÆ.

Cope, E. D. 1875 D, p. 357.
1875 X, p. 11.
Fritsch, A. 1883 A (1880), p. 127. (Nectridea.)
Lydekker, R. 1890 A, p. 196. (Urocordylidæ.)
Miall, L. C. 1875 A, p. 168. (Nectridea.)
Nicholson and Lydekker 1889 A, p. 1025. (Urocordylidæ.)
Wiedersheim, R. 1878 A, p. 42.

KERATERPETON Huxley. Type *K. galvani* Huxley.

Huxley, T. H. 1867 B, p. 354.
Andrews, C. W. 1895 A.
Cope, E. D. 1875 D, p. 371. (Ceraterpeton.)
Fritsch, A. 1883 A (1879), p. 57; p. 136 (1881).
Lydekker, R. 1890 A, p. 197. (Ceraterpetum.)
Maggi, L. 1898 A, fig. 10.
Miall, L. C. 1875 A, p. 170.
Miller, S. A. 1889 A, p. 619. (Ceraterpeton.)
Osborn, H. F. 1898 K, p. 165. (Ceraterpeton.)
Woodward, A. S. 1898 B, p. 132.
Zittel, K. A. 1890 A, p. 379.

Keraterpeton divaricatum Cope.

Cope, E. D. 1885 D, p. 406. (Ceraterpeton.)
Coal-measures; Ohio.

Keraterpeton punctolineatum Cope.

Cope, E. D. 1875 J. (Ceraterpeton punctolineatum.)
1875 D, p. 372 (C. lineopunctatum); pl. xli, fig. 4 (C. punctolineatum).
Coal-measures; Ohio.

Keraterpeton tenuicorne Cope.

Cope, E. D. 1875 D, p. 372 (Ceraterpeton lennicorne, *err. typ.*); pl. xlii, fig. 4 (C. recticorne, *err. typ.*).
1885 D, p. 407. (Ceraterpeton tenuicorne.)
1897 C, p. 85, pl. iii, fig. 2. (Ceraterpeton.)
Osborn, H. F. 1898 K, p. 165. (C. lennicorne.)
Coal-measures; Ohio, Pennsylvania.

OËSTOCEPHALUS Cope. Type *O. amphiuminus* Cope = *O. remex* Cope.

Cope, E. D. 1868 J, p. 218.
1869 M, p. 16.
1871 L.
1872 JJ.
1874 L, p. 266.
1875 D, p. 380.
Fritsch, A. 1883 A (1879), p. 57. (Syn.? of Urocordylus.)
Huxley, T. H. 1867 B, p. 359, pl. xx, figs. 1, 2. (Urocordylus.)
Miall, L. C. 1875 A, p. 169. (Syn. of Urocordylus.)
Miller, S. A. 1889 A, p. 623.
Newberry, J. S. 1868 A, p. 144. (Urocordylus.)
Nicholson and Lydekker 1889 A, p. 1025. (Urocordylus.)
Zittel, K. A. 1890 A, p. 381.

This genus is probably identical with *Urocordylus* Huxley.

Oëstocephalus rectidens Cope.

Cope, E. D. 1874 L, p. 268.
Cope, E. D. 1875 D, p. 386, pl. xxvii, figs. 3, 4.
Miall, L. C. 1875 A, p. 170.
Miller, S. A. 1889 A, p. 623, fig. 1189.
Coal-measures; Ohio.

Oëstocephalus remex Cope.

Cope, E. D. 1868 J, p. 217. (Sauropleura.)
1868 J, p. 219. (O. amphiuminus.)
1869 M, pp. ii, 17, fig. 2.
1871 G, p. 41. (O. remex and O. amphiuminus.)
1871 O.
1874 L, p. 268.
1875 D, pp. 366, 381, pl. xxvii, fig. 5?; pl. xxxi, fig. 1; pl. xxxii, fig. 1; pl. xxxiii, fig. 2; pl. xxxiv, fig. 4?.
Fritsch, A. 1883 A (1881), p. 128, fig. 72.
Miall, L. C. 1875 A, p. 170.
Coal-measures; Ohio.

PTYONIUS Cope. Type not designated.

Cope, E. D. 1874 L, p. 264.
1875 D, p. 373.
Fritsch, A. 1883 A. (1879); p. 57. (Syn.? of Urocordylus.)
Miall, L. C. 1875 A, p. 169. (Syn. of Urocordylus.)
Miller, S. A. 1889 A, p. 625.
Zittel, K. A. 1890 A, p. 381.

This genus is probably identical with *Urocordylus* Huxley.

Ptyonius marshii Cope.

Cope, E. D. 1869 M, p. 24. (Colosteus.)
1871 L, p. 177. (Oestocephalus.)
1874 L, p. 265.
1875 D, p. 375, pl. xxvii, fig. 6; pl. xxvii, figs. 2a, 3.
Lesley, J. P. 1889 A, p. 841, figure.
Miall, L. C. 1875 A, p. 170.
Coal-measures; Ohio.

Ptyonius nummifer Cope.

Cope, E. D. 1875 D, p. 374, pl. xli, figs. 2, 3.
Lesley, J. P. 1889 A, p. 842, figures.
Coal-measures; Ohio.

Ptyonius pectinatus Cope.

Cope, E. D. 1868 J, p. 216. (Sauropleura.)
1869 M, p. 20. (Oestocephalus.)
1874 L, p. 266.
1875 D, p. 377, pl. xxvii, fig. 7; pl. xxviii, figs. 2, 4, 6; pl. xxix, fig. 2; pl. xxx, fig. 2; pl. xxxv, figs. 1-3; pl. xli, fig. 1.

Fritsch, A. 1895 B, p. 3. (P. pectinatus?)
Lesley, J. P. 1889 A, p. 843, figures.
Miall, L. C. 1875 A, p. 170.
Coal-measures; Ohio; Bohem'a?.

Ptyonius serrula Cope.

Cope, E. D. 1874 L, p. 266.
1871 L, p. 177. (Oestocephalus serrula; no description.)
1875 D, p. 379, pl. xxviii, fig. 5?; pl. xxx, fig. 1.
Lesley, J. P. 1889 A, p. 844, figure.
Miall, L. C. 1875 A, p. 170.
Miller, S. A. 1889 A, p. 625, fig. 1192.
Coal-measures; Ohio.

Ptyonius vinchellianus Cope.

Cope, E. D. 1874 L, p. 265.
1871 L. (Oestocephalus winchellianus; no description.)
1875 D, p. 376, pl. xxviii, fig. 1.
Fritsch, A. 1883 A (1881), p. 128, fig. 71.
Lesley, J. P. 1889 A, p. 844, figure. (P. uinchellanus.)
Miall, L. C. 1875 A, p. 170.
Coal-measures; Ohio.

CTENERPETON Cope. Type *C. alveolatum* Cope.

Cope, E. D. 1897 C, p. 88.

Ctenerpeton alveolatum Cope.

Cope, E. D. 1897 C, p. 88, pl. iii, fig. 1[1].
Coal-measures; Pennsylvania.

TUDITANIDÆ.

Cope, E. D. 1875 D, p. 387.
1875 X, p. 11 (Tuditanidæ); p. 12 (Cocytinidæ).
Fritsch, A. 1883 A, p. 173. (Microbrachidæ.)
Nicholson and Lydekker 1889 A, p. 1027. (Microbrachidæ.)
Wiedersheim, R. 1878 A, p. 42.

TUDITANUS Cope. Genus based on *T. punctulatus* and *T. brevirostris*.

Cope, E. D. 1874 L, p. 271.
1871 L. (No definition; no described species.)
1872 JJ. (No definition; no described species.)
1875 D, p. 391.
1896 C.
Fritsch, A. 1883 A (1879), p. 65.
1883 A, p. 173.
Miall, L. C. 1875 A, p. 191.
Miller, S. A. 1889 A, p. 626.
Nicholson and Lydekker 1889 A, p. 1027.
Zittel, K. A. 1890 A, p. 378.

Tuditanus brevirostris Cope.

Cope, E. D. 1874 L, p. 272.
1875 D, p. 393, pl. xxvi, figs. 3, 4.
Lesley, J. P. 1890 A, p. 1236, figure.
Coal-measures; Ohio.

Tuditanus huxleyi Cope.

Cope, E. D. 1874 L, p. 274.
1875 D, p. 397, pl. xxxiv, fig. 2.
Lesley, J. P. 1890 A, p. 1237, figure.
Coal-measures; Ohio.

Tuditanus longipes Cope.

Cope, E. D. 1874 L, p. 210. (Sauropleura.)
1875 D, p. 398, pl. xxvi, fig. 2. (Not pl. xxxiv, fig. 1, *fide* Cope.)
1896 C.
1897 C, p. 88.
Lesley, J. P. 1890 A, p. 1257, figures.
Coal-measures; Ohio.

Tuditanus mordax Cope.

Cope, E. D. 1874 L, p. 274.
Cope, E. D. 1875 D, p. 395.
Miller, S. A. 1889 A, p. 627. (Syn. of Keraterpeton punctolineatum.)
Coal-measures; Ohio.

Tuditanus obtusus Cope.

Cope, E. D. 1868 J, p. 213. (Dendrerpeton.)
1869 M, pp. 8, 12, fig. 1. (Dendrerpeton.)
1874 L, p. 274.
1875 D, p. 396.
1885 D, p. 407.
Coal-measures; Ohio.

Tuditanus punctulatus Cope.

Cope, E. D. 1874 L, p. 271.
1875 D, p. 392, pl. xxxiv, fig. 1. (T. longipes on expl. of plate by error.)
1896 C.
1897 C, p. 88. (Isodectes.)
1898 B, p. 61. (Isodectes.)
Fritsch, A. 1883 A, p. 173, fig. 110.
Coal-measures; Ohio.

Tuditanus radiatus Cope.

Cope, E. D. 1874 L, p. 273.
1875 D, p. 394, pl. xxvii, fig. 1; pl. xxxiv, fig. 3; text, fig. 10.
Lesley, J. P. 1890 A, p. 1238, figure.
Miller, S. A. 1889 A, p. 626, fig. 1194.
Coal-measures; Ohio.

Tuditanus tabulatus Cope.

Cope, E. D. 1877 A, p. 577.
Coal-measures; Ohio.

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[1] On plate and explanation this species is called C. *foveolatum*.

COCYTINUS Cope. Type *C. gyrinoides* Cope.

Cope, E. D. 1871 L.
1872 JJ.
1874 L, p. 276.
1875 D, p. 360.
1875 X, p. 12.
Fritsch, A. 1883 A (1879), p. 61; p. 173 (1888).
Miall, L. C. 1875 A, p. 185.
Miller, S. A. 1889 A, p. 619.
Nicholson and Lydekker 1889 A, p. 1027.
Zittel, K. A. 1890 A, p. 378.

The family position of this genus is doubtful.

Cocytinus gyrinoides Cope.

Cope, E. D. 1871 L.
1874 L, p. 278.
1875 D, p. 364, pl. xxxix, fig. 4.
Fritsch, A. 1883 A, p. 173, fig. 111.
Miller, S. A. 1889 A, p. 620, fig. 1182.
Coal-measures; Ohio.

DIPLOCAULIDÆ.

Cope, E. D. 1881 K, p. 163.
Cope, E. D. 1882 B, p. 452.

DIPLOCAULUS Cope. Type *D. salamandroides* Cope.

Cope, E. D. 1877 E, p. 187.
1881 K, p. 163.
1882 B, p. 451.
Miller, S. A. 1889 A, p. 621.
Zittel, K. A. 1890 A, p. 382.

Diplocaulus limbatus Cope.

Cope, E. D. 1896 G, p. 456.
Permian; Texas.

Diplocaulus magnicornis Cope.

Cope, E. D. 1882 B, p. 453.

Case, E. C. 1900 A, p. 710.
Cope, E. D. 1882 HH.
1888 BB, p. 286.
1896 G, p. 455, pl. ix.
Permian; Texas.

Diplocaulus salamandroides Cope.

Cope, E. D. 1877 E. p. 187.
Case, E. C. 1900 A, p. 710, pl. i, figs. 16*a*–17*b*.
Cope, E. D. 1881 K, p. 163.
1888 BB, p. 286.
Permian; Illinois.

LEPOSPONDYLOUS GENERA OF UNCERTAIN POSITION.

AMBLYODON Dawson. Type *A. problematicum* Dawson.

Dawson, J. W. 1882 A, p. 635.

Amblyodon problematicus Dawson.

Dawson, J. W. 1882 A, p. 644, pl. xl, figs. 57–61.
Dawson, J. W. 1895 A, p. 75.
Coal-measures; Nova Scotia.

HYPHASMA Cope. Type *H. lævis* Cope.

Cope, E. D. 1875 J.
1875 D, p. 387.
Fritsch, A. 1883 A (1881), p. 127.
Miller, S. A. 1889 A, p. 622.
Zittel, K. A. 1890 A, p. 382.

Hyphasma lævis Cope.

Cope, E. D. 1875 J.
1875 D, p. 387, pl. xxxvii, fig. 4.
Miller, S. A. 1889 A, p. 622, fig. 1187.
Coal-measures; Ohio.

EURYTHORAX Cope. Type *E. sublævis* Cope.

Cope, E. D. 1871 L.
1874 L, p. 275.
1875 D, pp. 357, 401.
Fritsch, A. 1883 A (1879), p. 62.
Miall, L. C. 1875 A, p. 186.
Miller, S. A. 1889 A, p. 622.
Zittel, K. A. 1890 A, p. 378.

Eurythorax sublævis Cope.

Cope, E. D. 1871 L.
1872 JJ.
1874 L, p. 275.
1875 D, p. 402, pl. xlii, fig.
Coal-measures; Ohio.

THYRSIDIUM Cope. Type *T. fasciculare* Cope.

Cope, E. D. 1875 D, p. 365.
Miller, S. A. 1899 A, p. 626.
Zittel, K. A. 1890 A, p. 382.

Thyrsidium fasciculare Cope.

Cope, E. D. 1875 D, p. 365, pl. xlii, fig. 3.
Coal-measures; Ohio.

PLEUROPTYX Cope. Type *P. clavatus* Cope.

Cope, E. D. 1875 J.
1875 D, pp. 357, 370.
Miller, S. A. 1889 A, p. 624.

Pleuroptyx clavatus Cope.
Cope, E. D. 1875 J.
1875 D, p. 370, pl. xlii, fig. 1; pl. xliv, fig. 2.
Coal-measures; Ohio.

CERCARIOMORPHUS Cope. Type *C. parvisquamis* Cope.

Cope, E. D. 1885 D, p. 405.
Subordinal position doubtful.

Cercariomorphus parvisquamis Cope.
Cope, E. D. 1885 D, p. 405.
Coal-measures; Ohio.

Suborder APŒCOSPONDYLI nom. nov.

Baur, G. 1886 K. (Embolomeri.)
1888 C, p. 3. (Ganocephala, Rhachitomi, Embolomeri.)
Case, E. C. 1878 B, p. 510 (Rhachitomi); p. 511 (Embolomeri).
Cope, E. D. 1868 J, pp. 210, 221. (Labyrinthodontia and Ganocephala.)
1875 D, p. 356. (Labyrinthodontia and Ganocephala.)
1880 A, p. 49. (Labyrinthodontia and Ganocephala.)
1880 J. (Ganocephala.)
1880 L, p. 610. (Embolomeri, Ganocephala.)
1882 T. (Rhachitomi.)
1884 P, pp. 26, 36. (Embolomeri, Stegocephali.)
1885 G, p. 243. (Embolomeri.)
1885 W. (Embolomeri.)
1887 S, p. 331. (Rhachitomi, Embolomeri.)
1888 H. (Ganocephala.)
1888 V. (Ganocephala, Embolomeri, Rhachitomi.)
1888 AA. (Embolomeri, Rhachitomi.)
1889 D, p. 13. (Ganocephala, Embolomeri, Rhachitomi.)
1889 R, p. 861. (Ganocephala, Embolomeri, Rhachitomi.)
1891 F, p. 645. (Embolomeri, Rhachitomi, Ganocephali.)
1891 N, p. 28. (Ganocephali, Rhachitomi, Embolomeri.)
1898 B, p. 43. (Ganocephala, Rhachitomi, Embolomeri.)
Credner, H. 1882 A. (Stegocephali.)
1883 A. (Stegocephali.)
Credner, H. 1885 A. (Stegocephali.)
Credner, H. 1886 A. (Stegocephali.)
1888 A. (Stegocephali.)
1889 A. (Stegocephali.)
1890 A. (Stegocephali.)
Dawson, J. W. 1894 A, p. 265. (Labyrinthodontia.)
Fraas, E. 1889 A, p. 8. (Temnospondyli, Stereospondyli.)
Fritsch, A. 1883 A (1879), p. 33. (Labyrinthodontia.)
Gadow, H. 1898 A, p. 12. (Temnospondyli.)
Hoffman, C. K. 1874 A, p. 47. (Labyrinthodontia.)
Huxley, T. H. 1863 A. (Labyrinthodontia.)
1870 A. (Labyrinthodontia.)
1872 A, p. 150. (Labyrinthodontia.)
1876 B, xiii, p. 412. (Labyrinthodontia.)
Lydekker, R. 1890 A, p. 139. (Labyrinthodontia vera.)
Marsh, O. C. 1877 E. (Labyrinthodontia.)
Meyer, H. 1857 A, p. 208. ("Labyrinthodonten.")
Miall, L. C. 1875 C. (Labyrinthodontes.)
Nicholson and Lydekker 1889 A, p. 102.
Owen, R. 1845 B, pp. 182, 195. ("Labyrinthodonts.")
1860 A. pp. 155, 158, 168. (Ganocephala, Labyrinthodontia.)
1860 E, p. 182. (Ganocephala.)
1866 A, p. 14. (Labyrinthodontia and Ganocephala.)
Steinmann and Döderlein 1890 A, p. 611. (Embolomeri.)
Wiedersheim, R. 1878 A. (Ganocephala, Labyrinthodontia.)
Woodward, A. S. 1898 B, p. 132. (Labyrinthodontia.)
Zittel, K. A. 1890 A, p. 384 (Temnospondyli); p. 397 (Stereospondyli).

DENDRERPETONTIDÆ.

Fritsch, A. 1889 B (1885), p. 5.
Cope, E. D. 1875 X, p. 10. (Baphetidæ.)
Dawson, J. W. 1895 A, p. 75. (Dendrerpetonidæ.)
Lydekker, R. 1890 A, p. 170. (Dendrerpetidæ.)
Nicholson and Lydekker 1889 A, p. 1032. (Dendrerpetidæ.)

DENDRERPETON Owen. Type *D. acadianum* Owen.

Owen, R. 1853 C, p. 66.
Cope, E. D. 1868 J, p. 212.
1869 M, p. 12.
1880 A, p. 50.
Credner, H. 1888 A, p. 550.
Dawson, J. W. 1860 A, p. 273.
1863 A, pp. 431, 444.
1863 B.

Dawson, J. W. 1863 D, pp. 81, 282.
1868 A, p. 362.
1878 A, p. 362; suppl. p. 60.
1882 A, p. 635.
1891 B, p. 154.
1895 A, p. 76.
Fritsch, A. 1883 A (1879), p. 58.
1889 B, p. 6.
Huxley, T. H. 1863 A, p. 67.
Lydekker, R. 1890 A, p. 170. (Dendrerpetum.)
Maggi, L. 1898 A, fig. 19.
Miall, L. C. 1875 A, p. 550.
Miller, S. A. 1889 A, p. 620.
Nicholson and Lydekker 1889 A, p. 103.
Zittel, K. A. 1890 A, p. 396.

Dendrerpeton acadianum Owen.

Owen, R. 1853 C.
Cope, E. D. 1868 J, p. 214.
1869 M, pp. 9, 13.
Dawson, J. W. 1860 A, p. 273, figs. 10–13.
1862 A.
1863 A, p. 431.
1863 B, p. 470.
1863 C.
1863 D, pp. 81, 159, 282, pls. iii, vi.
1868 A, p. 362, fig. 142.
1876 A, pp. 440, 443, 445.
1878 A, p. 362, figs. 142*a–i*; suppl. p. 60.
1882 A, p. 642, pl. xl, figs. 46–51; pl. xliv, figs. 129, 130, 132–137.
1891 B, p. 145, figs. 1–3.
1894 A, p. 272, figure.
Dawson, J.W. 1894 B, p. 6.
1895 A, p. 76.
Fritsch, A. 1883 A (1879), p. 59.
1889 B (1885), p. 5, fig. 123.
Lesley, J. P. 1889 A, p. 193, figures.
1895 A, pl. dlxxii.
Lydekker, R. 1890 A, p. 223.
Lyell, C. 1853 A, p. 35.
Lyell and Dawson 1853 A, pls. ii, iii.
Marsh, O. C. 1862 B, p. 1.
Miall, L. C. 1875 A, p. 172.
Miller, S. A. 1889 A, p. 620, fig. 1183.
Wyman, J. 1853 C.
Coal-measures; Nova Scotia.

Dendrerpeton oweni Dawson.

Dawson, J. W. 1863 D, pp. 161, 282, pl. iv.
1863 A, p. 431.
1863 B, p. 470.
1863 C, p. 438.
1868 A, p. 368, fig. 143.
1876 A, pp. 443, 444.
1878 A, p. 368, figs. 143*a–g*; suppl. p. 60.
1882 A, p. 643, pl. xliv, figs. 131, 138, 139.
1891 B, p. 149.
1895 A, p. 76.
Fritsch, A. 1883 A (1879), p. 59.
Lesley, J. P. 1889 A, p. 195, figures.
1895 A, pl. dlxxii.
Lydekker, R. 1890 A, p. 223.
Miall, L. C. 1875 A, p. 172.
Coal-measures; Nova Scotia.

BAPHETES Owen. Type *B. planiceps* Owen.

Owen, R. 1854 A, p. 207.
Dawson, J. W. 1863 D, pp. 8, 282.
1868 A, p. 359.
1878 A, p. 328.
1894 A, p. 266.
1895 A, p. 76.
Fritsch, A. 1883 A (1879), p. 61.
1889 B (1885), p. 5.
Huxley, T. H. 1863 A, p. 67.
Miall, L. C. 1875 A, p. 183.
Miller, S. A. 1889 A, p. 618.
Nicholson and Lydekker 1889 A, p. 1033.
Owen, R. 1855 A.
1860 E, p. 184.
Zittel, K. A. 1890 A, p. 398.
The family position of this genus is doubtful.

Baphetes minor Dawson.

Dawson, J. W. 1870 A.
1894 A, p. 268.
Coal-measures; Nova Scotia.

Baphetes planiceps Owe

Owen, R. 1854 A, pl. ix.
Cope, E. D. 1869 M, p. 25.
Dawson, J. W. 1855 A.
1863 A, p. 430.
1863 C.
1863 D, pp. 9, 282, pl. ii.
1868 A, p. 359, fig. 141.
1878 A, pp. 328, 359, figs. 137, 141.
1894 A, p. 266.
1895 A, p. 76.
Fritsch, A. 1889 B (1885), p. 5, fig. 124.
Lesley, J. P. 1889 A, p. 80, figures.
Miller, S. A. 1889 A, p. 619, fig. 1179.
Nicholson and Lydekker 1889 A, p. 1033, fig. 962.
Owen R. 1855 A.
Coal-measures; Nova Scotia.

PLATYSTEGOS Dawson. Type *P. loricatum* Dawson.

Dawson, J. W. 1895 A, p. 76.

Platystegos loricatum Dawson.

Dawson, J. W. 1895 A, p. 76.
Coal-measures; Nova Scotia.

SAUROPLEURIDÆ nom. nov.

Cope, E. D. 1875 D, p. 357. (Colosteidæ.)
1875 X, p. 10. (Colosteidæ.)
Wiedersheim R. 1878 A, p. 42. (Colosteidæ.)

The name *Sauropleuridæ* is demanded because the genus *Colosteus*, from which *Colosteidæ* is derived, is regarded as a synonym of *Sauropleura*.

SAUROPLEURA Cope. Type *S. digitata* Cope.

Cope, E. D. 1868 J, p. 215.
1869 M, p. 22. (Colosteus, type, *C. foveatus*.)
1874 L, p. 269.
1875 D, pp. 373, 402.
1875 D, p. 405. (Colosteus.)
1897 C, p 88.
Fritsch, A. 1883 A (1879), p. 61 (Colosteus); pp. 65, 127 (Sauropleura).
Miall, L. C. 1875 A, p. 185 (Colosteus); p. 190 (Sauropleura).
Miller, S. A. 1889 A, p. 620 (Colosteus); p. 625 (Sauropleura).
Zittel, K. A. 1890 A, p. 379 (Colosteus); p. 382 (Sauropleura).

Sauropleura digitata Cope.

Cope, E. D. 1868 J, p. 216.
1869 M, pp. 16, 242.
1874 L, p. 270.
1875 D, p. 403, pl. xxxivi, fig. 1
1897 C, p. 88.
Dawson, J. W. 1891 B, p. 158.
Fritsch, A. 1883 A (1881), p. 128, fig. 70.
Lesley, J. P. 1890 A, p. 926, figure.
Coal-measures; Ohio.

Sauropleura foveata (Cope).

Cope, E. D. 1869 M, p. 24. (Colosteus.)
1875 D, p. 406, pl. xxxvi, fig. 1.
Coal-measures; Ohio.

Sauropleura latithorax Cope.

Cope, E. D. 1897 C, p. 86, pl. iii, fig. 4.
Coal-measures; Ohio.

Sauropleura newberryi Cope.

Cope, E. D. 1875 D, p. 404, pl. xxxvii, figs, 2, 3; pl. xli, fig. 5.
Lesley, J. P. 1890 A, p. 928, figure.
Coal-measures; Ohio.

Sauropleura pauciradiata Cope.

Cope, E. D. 1874 L, p. 275. (Colosteus.)
1875 D, p. 408, pl. xl, figs. 1, 2. (Colosteus.)
1897 C, p. 86.
Coal-measures; Ohio.

Sauropleura scutellata (Newb.).

Newberry J. S. 1856 B, p. 98. (Pygopterus.)
Cope, E. D. 1869 M, p. 23. (Colosteus crassiscutatus.)
1871 G, p. 41. (Colosteus.)
1873 Q, p. 418. (Colosteus.)
1874 L, p. 275. (Colosteus.)
1875 D, p. 407, pl. xxix, fig. 3; pl. xxxiii, fig. 1; pl. xxxvi, fig. 2. (Colosteus.)
1877 A, p. 578. (Colosteus.)
1897 C, p. 88. (Sauropleura.)
Woodward, A. S. 1891 A, p. 474. ("Doubtful fossil.")
Coal-measures; Ohio.

LEPTOPHRACTUS Cope. Type *L. obsoletus* Cope.

Cope, E. D. 1873 O, p. 340.
1875 D, p. 399.
1882 B, p. 461.
Fritsch, A. 1883 A (1879), p. 62.
Miall, L. C. 1875 A, p. 187.
Miller, S. A. 1889 A, p. 623.
Zittel, K. A. 1890 A, p. 378.

Leptophractus lineolatus Cope.

Cope, E. D. 1877 A, p. 576.
Coal-measures; Ohio.

Leptophractus obsoletus Cope.

Cope, E. D. 1873 O, p. 341.
1875 D, p. 400, pl. xxxviii; pl. xxxix, figs. 1, 2, 3?.
Woodward, A. S. 1891 A, p. 262. (Sagenodus ohioensis, in part.)
Coal-measures; Ohio.

ARCHEGOSAURIDÆ.

References are here given also to the literature of the genus *Archegosaurus*.

Baur, G. 1886 C. (Archegosaurus.)
1888 C. (Archegosaurus.)
1896 C, p. 662. (Archegosaurus.)
1897 A. (Archegosaurus.)
Cope, E. D. 1882 T. (Trimerorhachidæ.)
1884 P, p. 28. (Trimerorhachidæ.)
1889 R, p. 861. (Trimerorhachidæ, Archegosauridæ.)
1891 N, p. 29. (Trimerorhachidæ, Archegosauridæ.)
1898 B, p. 45. (Ganocephali.)
Credner, H. 1882 A, p. 231. (Archegosaurus.)
1885 A, p. 718. (Archegosaurus.)
Emery, C. 1897 A. (Archegosaurus.)
Fraas, E. 1889 A. (Archegosaurus.)
Fritsch, A. 1889 B (1885), p. 13. (Archegosauridæ.)
Gadow, H. 1896 A, p. 21. (Archegosaurus.)
Gaudry, A. 1883 A, p. 261. (Archegosaurus.)

Goldfuss, A. 1847 A, p. 3, pls. i-iii. (Archegosaurus.)
Huxley, T. H. 1863 A, p. 67. (Archegosauria.)
Jaekel, O. 1896 A, p. 3. (Archegosaurus.)
1896 B, p. 118. (Archegosaurus.)
Lydekker, R. 1890 A, p. 177. (Archegosauridæ.)
Maggi, L. 1898 A, figs. 4-6. (Archegosaurus.)
Meyer, H. 1851 B, (Archegosaurus.)
1857 A. (Archegosaurus.)
1858 A. (Archegosaurus.)
Miall, L. C. 1875 A, p. 166. (Archegosauria.)
Miall, L. C. 1875 C. (Archegosaurus.)
Nicholson and Lydekker 1889 A, p. 1029. (Archegosauridæ.)
Owen, R. 1860 A, p. 156. (Archegosaurus.)
Pictet, F. J. 1853 A, p. 551. (Archegosaurus.)
Quenstedt, F. A. 1852 A, p. 153. (Archegosaurus.)
1885 A, p. 245. (Archegosaurus.)
Woodward, A. S. 1898 B, p. 133. (Archegosaurus.)
Zittel, K. A. 1890 A, p. 384. (Archegosaurus.)

It is possible that the name Trimerorhachidæ has priority over Archegosauridæ.

TRIMERORHACHIS Cope. Type *T. insignis* Cope.

Cope, E. D. 1878 B, p. 524.
Baur, G. 1888 C, p. 6.
Cope, E. D. 1878 U.
1878 DD.
1880 A, p. 54.
1884 P, p. 32.
1888 H, p. 298.
1888 U, p. 915.
1888 AA, p. 243.
Gadow, H. 1896 A, p. 21.
Hulke, J. W. 1888 A, p. 423.
Lydekker, R. 1890 A, p. 189.
Miller, S. A. 1889 A, p. 626.
Nicholson and Lydekker 1889 A, p. 1030.
Zittel, K. A. 1890 A, p. 389.

Trimerorhachis bilobatus Cope.

Cope, E. D. 1883 H, p. 629.
1884 P, p. 32.
1888 BB, p. 286.
Permian; Texas.

Trimerorhachis conangulus Cope.

Cope, E. D. 1896 I, p. 137.
Permian; Texas.

Trimerorhachis insignis Cope.

Cope, E. D. 1878 B, p. 524.
1880 A, p. 54.
1881 K, p. 163.
1883 H, p. 630.
1884 P, p. 32, figs. 3, 4.
1888 O, p. 466, pl. vi, fig. 1.
1888 AA, p. 43, fig. 1.
1888 BB, p. 286.
Lydekker, R. 1890 A, p. 190, fig. 46.
Zittel, K. A. 1890 A, p. 389, figs. 379 *a-d*.
Permian; Texas.

Trimerorhachis mesops Cope.

Cope, E. D. 1896 G, p. 454.
Permian; Texas.

DISSORHOPHUS Cope. Type *D. multicinctus* Cope.

Cope, E. D, 1895 D.
Baur, G. 1896 B, p. 569.

Dissorhophus articulatus Cope.

Cope, E. D. 1896 E, pl. xxi.
Permian; Texas.

Dissorhophus multicinctus Cope.

Cope, E. D. 1895 D.
Permian; Texas.

CRICOTIDÆ.

Cope, E. D. 1884 P, p. 33.
1889 R, p. 861.
1891 N, p. 30.
1898 B, p. 46.
Fritsch, A. 1889 B (1885), p. 11. (Diplovertebridæ.)
Lydekker, R. 1890 A, p. 175. (Diplospondylidæ.)

CRICOTUS Cope. Type *C. heteroclitus* Cope.

Cope, E. D. 1875 T, p. 405.
Baur, G. 1888 C, p. 14.
1896 C, p. 662.
Cope, E. D. 1878 DD,
1880 J.
1880 L, p. 610.
1884 I, p. 29.
1884 P, p. 33.
1885 W.
1886 O.
1886 P.
1888 U, p. 915.
Cope, E. D. 1888 AA.
1888 BB, p. 286.
1888 DD, p. 363.
Gadow, H. 1896 A, p. 23.
Hay, O. P. 1895 A, p. 45.
Lydekker, R. 1890 A, p. 175.
Maggi, L. 1898 A, fig. 20.
Miller, S. A. 1889 A, p. 620.
Williston, S. W. 1897 B, figs. 1-4.
1898 J, p. 120.
Woodward, A. S. 1898 B, p. 136.
Zittel, K. A. 1890 A, p. 394.

Cricotus crassidiscus Cope.

Cope, E. D. 1884 I, p. 28.
1878 B, p. 522. (C. heteroclitus, in part.)
1884 P, p. 39, text fig. 7, pl. v. (See C. heteroclitus.)
1888 AA, p. 246, fig. 3.
1888 BB, p. 286.
Williston, S. W. 1897 B, p. 54.
1898 J, p. 121.
Zittel, K. A. 1890 A, p. 351, fig. 331; p. 395, fig. 384. (C. heteroclitus; not of Cope.)
Permian; Texas.

Cricotus gibsoni Cope.

Cope, E. D. 1877 E, p. 185.
Case, E. C. 1900 A, p. 709, figs. 15*a*–15*c*.
Cope, E. D. 1881 K, p. 163.
1884 P, p. 39.
1888 BB, p. 286.
Permian; Illinois.

Cricotus heteroclitus Cope.

Cope, E. D. 1875 T, p. 405.
Case, E. C. 1900 A, p. 708, pl. i, figs. 12*a*–12*d*; 13, 14.
Cope, E. D. 1877 E, p. 186. (C. discophorus.)
1877 N, p. 63.
1878 B, p. 523. (C. discophorus.)
1881 K, p. 163.
1884 I, p. 29.
1884 P, p. 39, fig. 7 and pl. v. (See C. crassidiscus.)
1888 AA, p. 253, pl. i, figs. 7, 8.
1888 BB, p. 286.
Lydekker, R. 1890 A, p. 176, fig. 42.
Permian; Illinois.

Cricotus hypantricus Cope.

Cope, E. D. 1884 I, pp. 29, 30.
1888 AA, p. 253, pl. i, figs. 2–6.
1888 BB, p. 286.
Permian; Texas.

Cricotus sp. indet.

Case, E. C. 1900 A, p. 709, pl. v, figs. 13*a*–16.
Permian; Illinois.

ANTHRACOSAURIDÆ.

Cope, E. D. 1875 X, p. 10.
Atthey, T. 1876 A, p. 146, pls. viii–xi. (Anthracosaurus.)
Hancock and Atthey 1869 A, p. 318. (Anthracosaurus.)
Huxley, T. H. 1863 A. (Anthracosaurus.)
Lydekker, R. 1890 A, p. 157.
Miall, L. C. 1875 A, p. 159. (Anthracosaurus.)
Nicholson and Lydekker 1889 A, p. 1033.
Zittel, K. A. 1890 A, p. 398. (Gastrolepidoti.)

EOSAURUS Marsh. Type *E. acadianus* Marsh.

Marsh, O. C. 1862 B.
Agassiz, L. 1862 A.
Cope, E. D. 1869 M, p. 30.
Fritsch, A. 1883 A (1879), p. 61.
Huxley, T. H. 1863 A, p. 62.
Lydekker, R. 1890 A, p. 166.
Marsh, O. C. 1863 A.
Miall, L. C. 1875 A, p. 186.
Miller, S. A. 1889 A, p. 621.
Nicholson and Lydekker 1889 A, p. 1037.
Zittel, K. A. 1890 A, p. 400.

The position of Eosaurus in this family is not at all established.

Eosaurus acadianus Marsh.

Marsh, O. C. 1862 B, pls. i, ii.
Cope, E. D. 1869 M, p. 30.
Dawson, J. W. 1863 A, p. 431.
1863 C, p. 440.
1863 D, pp. 275, 283.
1868 A, p. 382, fig. 148.
1878 A, p. 382, fig. 148.
Huxley, T. H. 1863 A, p. 62.
Lesley, J. P. 1895 A, pl. dlxxii.
Lydekker, R. 1890 A, p. 166.
Marsh, O. C. 1862 A. (No description.)
1863 A.
Miller, S. A. 1889 A, p. 621, fig. 1184.
Coal-measures; Nova Scotia.

ERYOPIDÆ.

Cope, E. D. 1882 T.
1882 B, pp. 460, 461.
1884 P, p. 28.
1885 W.
1891 N, p. 29.
Lydekker, R. 1890 A, p. 191.
Nicholson and Lydekker 1889 A, p. 1029.

ERYOPS Cope. Type *E. megacephalus* Cope.

Cope, E. D. 1877 E, p. 188.
Baur G. 1888 C, p. 13.
Baur and Case 1899 A, p. 3, footnote.
Broili, F. 1899 A, p. 84.
Cope, E. D. 1878 B, p. 515 (Epicordylus, type *E. erythroliticus*); p. 520 (Eryops); p. 521 (Parioxys, type *P. ferricolus*): p. 526 (Rhachitomus, type *R. valens*).

Cope, E. D. 1878 U. (Rhachitomus, Parioxys, Epicordylus.)
 1878 AA. (Rhachitomus.)
 1878 DD. (Epicordylus.)
 1879 A, p. 34. (Rhachitomus.)
 1880 A, pp. 49–51. (Eryops, Rhachitomus.)
 1880 J.
 1882 T.
 1884 P, p. 33.
 1886 O.
 1886 P.
 1888 AA.
 1888 DD.
 1894 C, p. 789.
 1896 G, p. 439.
Emery C. 1897 A.
Gadow H. 1896 A, p. 21.
Lydekker R. 1890 A, p. 191.
Miller, S. A. 1889 A, p. 622.
Nicholson and Lydekker 1889 A, pp. 1022, 1032.
Seeley, H. G. 1892 A.
Stickler, L. 1899 A, p. 85.
Williston, S. W. 1899 E, p. 185.
Zittel, K. A. 1890 A, p. 392.

Eryops erythroliticus Cope.

Cope, E. D. 1878 B, p. 515. (Epicordylus.)
 1878 U. (Epicordylus.)
 1888 AA, p. 253, pl. i, fig. 2.
 1888 BB, p. 286.
 Permian; Texas.

Eryops ferricolus Cope.

Cope, E. D. 1878 B, p. 521. (Parioxys.)
 1878 U. (Parioxys.)
 1881 K, p. 163. (Parioxys.)
 1884 P, p. 35.
 1888 BB, p. 286.
 Permian; Texas.

Eryops megacephalus Cope.

Cope, E. D. 1877 E, p. 188.
Baur, G. 1897 A, p. 978.
Broili, F. 1899 A, p. 61, pls. viii–x.
Cope, E. D. 1878 B, p. 520 (E. megacephalus)· p. 526 (Rhachitomus valens).
 1878 U. (Rhachitomus valens.)
 1880 A, p. 51, pls. i–iv.
 1881 K, p. 163.
 1884 P, p. 29, figs. 5, 6 and pl. iii.
 1888 AA, figs. 2, 6.
 1888 BB, p. 286.
 1888 DD, with plate.
Dana, J. D. 1896 A, p. 686, fig. 1123.
Emery, C. 1897 A, p. 102, figs. 1, 3.
Hulke, J. W. 1888 A, p. 423. (Rhachitomus valens.)
Lydekker, R. 1890 A, p. 191, fig. 47.
Seeley, H. G. 1892 A, pp. 349, 360.
Stickler, L. 1899 A, p. 85, pls. xi, xii.
Williston, S. W. 1899 C, p. 221.
 1899 E, p. 185, pls. xxvii, xxix, xxx.
Zittel, K. A. 1890 A, p. 393, figs. 382, 383.
 Permian; Texas, Indian Territory.

Eryops? platypus Cope.

Cope, E. D. 1877 A, p. 574. (Ichthycanthus.)
Baur, G. 1888 C, p. 16. (Ichthycanthus.)
Cope, E. D. 1885 Z, p. 9. (Ichthycanthus.)
 1888 BB, p. 289, fig. 1. (Eryops.)
 Coal-measures; Ohio.

Eryops reticulatus Cope.

Cope, E. D. 1881 AA, p. 1020.
 1884 P, p. 34.
 1888 BB, p. 286.
 Permian; New Mexico.

ICHTHYCANTHUS Cope. Type *I. ohiensis* Cope.

Cope, E. D. 1877 A, p. 573.
Baur, G. 1888 C. p. 16.
Cope, E. D. 1885 Z, p. 9.
Miller, S. A. 1889 A, p. 622.
Nicholson and Lydekker 1889 A, p. 1032.

Ichthycanthus ohiensis Cope.

Cope, E. D. 1877 A, p. 573.
 1885 Z, p. 9.
 Coal-measures; Ohio.

ZATRACHYS Cope. Type *Z. serratus* Cope.

Cope, E. D. 1878 B, p. 523.
Broili, F. 1899 A, p. 84. (Zatrachis.)
Cope, E. D. 1882 B, p. 461.
 1882 T.
 1884 P, p. 36.
 1888 U.
 1895 D.
Miller, S. A. 1889 A, p. 627.
Zittel, K. A. 1890 A, p. 390.

Zatrachys apicalis Cope.

Cope, E. D. 1881 AA, p. 1020.
 1884 P, p. 36.
 1888 BB, p. 286.
 1896 E, p. 937.
 Permian; New Mexico.

Zatrachys conchigerus Cope.

Cope, E. D. 1896 G, p. 453.
 Permian; Texas.

Zatrachys microphthalmus Cope.

Cope, E. D. 1896 G, p. 452.
 Permian; Texas.

Zatrachys serratus Cope.

Cope, E. D. 1878 B, p. 523.
 1881 K, p. 163.
 1884 P, p. 36.
 1888 O, p. 466, pl. vi, fig. 2.
 1888 BB, pp. 286, 289.
 Permian; Texas.

ANISODEXIS Cope. Type *A. imbricarius* Cope.

Cope, E. D. 1882 B, p. 459.
Broili, F. 1899 A, p. 84.
Cope, E. D. 1884 P, p. 36.
Miller, S. A. 1889 A, p. 618.
Zittel, K. A. 1890 A, p. 393.

Anisodexis enchodus Cope.

Cope, E. D. 1885 B, p. 406.
Cope, E. D. 1897 C, p. 88.
Coal-measures; Ohio.

Anisodexis imbricarius Cope.

Cope, E. D. 1882 B, p. 459.
1884 P, p. 36.
1888 BB, p. 286.
Permian; Texas.

ACHELOMA Cope. Type *A. cumminsi* Cope.

Cope, E. D. 1882 B, p. 455.
Broili, F. 1899 A, p. 84.
Cope, E. D. 1884 P, p. 35.
Miller, S. A. 1889 A, p. 617.
Zittel, K. A. 1890 A, p. 393.

Acheloma cumminsi Cope.

Cope, E. D. 1882 B, p. 456.
1884 P, p. 35.
1888 BB, p. 286.
Permian; Texas.

MASTODONSAURIDÆ.

Huxley, T. H. 1863 A, p. 65. (Mastodonsauria.)
Lydekker, R. 1890 A, p. 141.
Miall, L. C. 1875 A, p. 149.
Quenstedt, F. A. 1850 B. ("Mastodonsaurier.")
1885 A, p. 240. (Mastodonsauri.)
Zittel, K. A. 1890 A, p. 401. (Labyrinthodonta.)

MASTODONSAURUS Jaeger. Type *Salamandroides giganteus* Jaeger.

Jaeger, G. F. 1828 A, p. 35.
Cope, E. D. 1898 B, p. 57, pl. i, fig. 1.
Fraas, E. 1889 A, p. 82.
Huxley, T. H. 1863 A, p. 65.
Jaekel, O. 1896 A, p. 5.
Lydekker, R. 1890 A, p. 142.
Maggi, L. 1898 A, figs. 11, 23.
Miall, L. C. 1875 A, p. 151.
Owen, R. 1841 D, p. 5.
1842 B. (Labyrinthodon.)
1842 C. (Labyrinthodon.)
Pictet, F. J. 1853 A, p. 547.
Quenstedt, F. A. 1850 B.
1852 A, p. 148.
1885 A, p. 240.
Woodward, A. S. 1898 B, p. 137.
Zittel, K. A. 1890 A, p. 404.

Mastodonsaurus sp. indet.

Williston, S. W. 1897 G, pl. xxi.
Carboniferous; Kansas.

EUPELOR Cope. Type *Mastodonsaurus durus* Cope.

Cope, E. D. 1868 J, p. 221.
1893 A, p. 12.
Fritsch, A. 1883 A (1879), p. 62.
Miall, L. C. 1875 A, p. 186.
Zittel, K. A. 1890 A, p. 408.

Eupelor durus Cope.

Cope, E. D. 1866 D, p. 250. (Mastodonsaurus.)
Cope, E. D. 1868 J, p. 221.
1869 M, p. 25.
1887 A, p. 209.
Fritsch, A. 1883 A (1879), p. 62.
Miall, L. C. 1875 A, p. 186.
Triassic; Pennsylvania.

PARIOSTEGUS Cope. Type *P. myops* Cope.

Cope, E. D. 1868 J, p. 211.
1869 M, p. 10.
Fritsch, A. 1883 A (1879), p. 64.
Miall, L. C. 1875 A, p. 189.
Zittel, K. A. 1890 A, p. 189.

Pariostegus myops Cope.

Cope, E. D. 1868 J, p. 212.
1869 M, p. 11.
1875 V, p. 32.
Triassic; North Carolina.

DICTYOCEPHALUS Leidy. Type *D. elegans* Leidy.

Leidy, J. 1856 L, p. 256.
1857 A, p. 272.
Miall, L. C. 1875 A, p. 185.
Zittel, K. A. 1890 A, p. 408.

Dictyocephalus elegans Leidy.

Leidy, J. 1856 L, p. 256.
Cope, E. D. 1868 J, p. 221.
1869 M, p. 25.
Cope, E. D. 1875 V, p. 32.
Emmons E, 1856 A, p. 347. (No name.)
1857 A, p. 59, figs. 31, 32.
1858 A, p. 78.
1860 A, p. 184, fig. 162.
Fritsch, A. 1883 A (1879), p. 61.
Leidy, J. 1857 A, p. 272.
Triassic (Chatham); North Carolina.

Order URODELA.

Baur, G. 1888 C, pp. 36-62.
Boulenger, G. A, 1882 A.
Cope, E. D. 1866 F, p. 97.
    1869 M, p. 5.
    1871 B.
    1875 D, p. 352.
    1888 H, p. 299.
    1888 O.
    1888 R.
    1889 D, p. 29.
    1891 N, pp. 28, 31.
    1898 B, p. 48.
Emery, C. 1897 B.
Gadow, H. 1889 A, p. 459.
    1896 A, p. 2.
    1898 A, p. 13.
Gegenbaur, C. 1864 A.
    1865 B, p. 66.
    1898 A.
Goeppert, E. 1895 B.
    1896 A, p. 398.
Haeckel, E. 1895 A, p. 279.
Hasse, C. 1893 A.
Hay, O. P. 1895 A, p. 46.
    1896 B, p. 959.
    1899 F, p. 682.
Hoffmann, C. K. 1874 A.
    1878 A.
Howes, G. B. 1888 A.
Huxley, T. H. 1872 A.
    1874 A.
    1875 A.
    1875 C.
Kehner, F. A. 1876 A.
Mivart, St. G. 1870 A.
Parker, W. K. 1868 A, p. 58.
    1879 B, pp. 31, 61.
    1881 A, p. 262.
    1882 C.
    1882 D.
Peters, K. 1895 A.
Pollard, H. B. 1892 A, p. 420.
Riese H. 1892 A.
Stannius, H, 1856 A.
Walter, F. 1887 A.
Wiedersheim, R. 1876 A.
    1877 A.
    1880 A.
    1889 A, p. 432.
Zittel, K. A. 1890 A, p. 412.
Zwick, W. 1897 A.

GENERA INCERTÆ SEDIS.

Scapherpeton Cope. Type *S. tectum* Cope.

Cope, E. D. 1876 I, p. 353.
    1882 J, p. 979.
    1884 O, p. 100.
Zittel, K. A. 1890 A, p. 420.

Scapherpeton excisum Cope.

Cope, E. D. 1876 I, p. 357.
    1877 G, p. 574.
  Cretaceous (Laramie); Montana.

Scapherpeton favosum Cope.

Cope, E. D. 1876 I, p. 357.
Cope, E. D. 1877 G, p. 574.
  Cretaceous (Laramie); Montana.

Scapherpeton laticolle Cope.

Cope, E. D. 1876 I, p. 356.
    1877 G, p. 573.
  Cretaceous (Laramie); Montana.

Scapherpeton tectum Cope.

Cope, E. D. 1876 I, p. 355.
    1877 G, p. 573.
  Cretaceous (Laramie); Montana.

Hemitrypus Cope. Type *H. jordanianus* Cope.

Cope, E. D. 1876 I, p. 358.
    1882 J, p. 979.
    1884 O, p. 100.
Zittel, K. A. 1890 A, p. 420.

Hemitrypus jordanianus Cope.

Cope, E. D. 1876 I, p. 358.
    1877 G, p. 574.
    1882 J, p. 979.
  Cretaceous (Laramie); Montana.

Order SALIENTIA Laurenti.

Laurenti, J. N., 1768, Synop. Rept., p. 24.

This group is usually denominated *Anura*, and this term is employed by the following writers unless otherwise indicated. *Salientia* has priority and is unobjectionable.

Born, G. 1880 A, p. 51.
Boulenger, G. A. 1882 B. (Batrachia salientia.)
Cope, E. D. 1866 F.
    1868 J, p. 209.
    1869 M, p. 6.
    1875 D, pp. 352, 354.
    1888 H, p. 301. (Salientia.)
    1889 D, p. 232. (Salientia.)
    1889 R, p. 861. (Salientia.)

Gadow, H. 1889 A, p. 461.
1896 A, p. 15.
1898 A. p. 14.
Gaupp, E, 1895 A.
Gegenbaur, C. 1864 A.
1865 B, p. 52.
1898 A.
Goeppert, E. 1896 A, p. 427.
Haeckel, E. 1895 A. p. 261. (Batrachia.)
Hay, O. P. 1899 F, p. 682.
Hoffmann, C. K. 1874 A. (Ecaudata.)
Howes, G. B. 1888 B.
Huxley, T. H. 1872 A.
1875 C.
Leydig, F. 1876 A.
Meyer, H. 1845 A, p. 18.
Müller, J. 1831 A, p. 209. (Batrachia.)
Nicholson and Lydekker 1889 A, p. 1042. (Ecaudata.)
Parker, W. K. 1868 A, p. 66. (Amphibia anoura.)
1871 A.
1877 A. (Batrachia.)
1879 B, p. 31.
1881 A.
Perrin, A. 1896 A.
Peters, K. 1895 A.
Stannius, H. 1856 A. (Batrachia.)
Wiedersheim, R. 1889 A, p. 435.
Zittel, K. A. 1890 A, p. 421.
Zwick, W. 1897 A.

RANIDÆ.

Boulenger, G. A. 1882 B, p. 3.
Cope, E. D. 1871 B.
1889 D, p. 390.
Hoffmann, C. K. 1874 A.
Meyer, H. 1860 B.
Parker, W. K. 1871 A.
1881 A.
Stannius, H. 1856 A. (Ranina.)
Zittel, K. A. 1890 A, p. 428.

RANA Linn. Type *R. temporaria* Linn.

Linnaeus, C., 1758, Syst. Nat., ed. x, p. 210.
Boulenger, G. A. 1882 B, 6.
Cope, E. D. 1889 D, p. 393.
Hoffmann, C. K. 1874 A.
Parker, W. K. 1881 A.
Zittel, K. A. 1890 A, p. 428.

Rana sp. indet.

Wheatley, C. 1871 B.
Pleistocene; Pennsylvania.

EOBATRACHUS Marsh. Type *E. agilis* Marsh.

Marsh, O. C. 1887 A, p. 328. (No definition.)

Eobatrachus agilis Marsh.

Marsh, O. C. 1887 A, p. 328. (No description.)
1897 C, p. 508. (No description.)
Jurassic; Wyoming.

Class REPTILIA.

Baur, G. 1885 E.
1886 B.
1886 H.
1892 D. p. 211.
1895 A.
1895 D.
1895 E.
1896 A.
Bemmelen, J. F. 1899 A, p. 162.
Boulenger, G. A. 1885 A. (Lacertilia.)
1887 A. (Lacertilia.)
1889 A. (Testudinata, Crocodilia.)
1893 A. (Ophidia.)
1894 A. (Ophidia.)
1896 C. (Ophidia.)
Burckhardt, R. 1895 A.
Calori L. 1894 A.
Case, E. C. 1898 A.
Cope, E. D. 1864 A.
1869 M, pp. 3, 26.
1871 B.
1885 G.
1887 S, p. 338
1888 AA.
Cope, E. D. 1889 R, p. 863.
1891 N, p. 35.
1892 N.
1892 R.
1898 B, p. 52.
1900 A, p. 159.
Credner, H. 1888 A.
Cuvier, G. 1834 A, ix, pp. 1-24.
Fürbringer, M. 1885 B.
Gadow, H. 1896 A, p. 23.
1898 A. p. 17.
Gaupp, E. 1891 A.
1895 B.
1900 A.
Gegenbaur, C. 1864 A.
1865 B, p. 24.
1898 A.
Günther, A. 1886 A.
Haeckel, E. 1895 A, p. 291.
Hallmann, E. 1837 A, pp. 16, 29.
Hoffmann, C. K. 1876 A.
1878 A.
Humphrey, G. M. 1866 A.

Huxley, T. H. 1867 A, p. 415.
1868 A.
1870 A.
1872 A, p. 167.
1876 B, xiii pp. 429, 514.
Kehner, F. A. 1876 A.
Kehrer, G. 1886 A, p. 73.
Kingsley and Ruddick 1900 A, p. 219.
Köstlin, O. 1844 A.
Leidy, J. 1865 A.
Levy, H. 1898 A.
Lydekker, R. 1888 B.
1889 F.
1889 G.
1890 A.
Männer, H. 1899 A, p. 43.
Marsh, O. C. 1877 E.
Meyer, H. 1845 A.
1855 A.
1856 B.
1860 D.
Mivart, St. G. 1886 A.
Nicholson and Lydekker 1899 A, p. 1047.
Osborn, H. F. 1899 I, p. 156.
1900 J, p. 943.
Owen, R. 1840 A.
1842 A.
1845 B, p. 179.
1847 B, p. 283.
1860 A.
Parker, W. K. 1868 A, p. 90.
1880 A.
Pictet, F. J. 1853 A, p. 422
Röse, C. 1895 A.
Seeley, H. G. 1888 H.
1898 A, p. 357.
Segond, L. A. 1873 A, pp. 1, 24.
Sixta, V. 1890 A.
Stannius, H. 1856 A. (Amphibia monopnoa.)
Walter, F. 1887 A.
Wiedersheim, R. 1889 A, p. 437.
Woodward, H. 1874 A.
1874 B.
1898 B, p. 140.
Zittel, K. A. 1890 A, pp. 437, 801.

Order COTYLOSAURIA Cope.

Cope, E. D. 1880 H.
Baur, G. 1885 J. (< Theromorpha.)
1887 A. (< Theromorpha.)
1887 C, p. 102. (< Theromorpha.)
1891 C, p. 354. (< Theromora.)
1896 B, p. 569.
Baur and Case 1897 A. (< Pareiasauria.)
Burckhardt, R. 1895 A. (< Theromorpha.)
Case, E. C. 1898 A, pp. 70, 73. (< Pareiasauria.)
1898 B, p. 517.
1899 A, p. 244.
Cope, E. D. 1878 CC. (< Theromorpha.)
1880 A. (< Theromorpha.)
1882 B, p. 448.
1885 A. (< Theromorpha.)
1885 G, p. 246. (< Theromorpha.)
1887 S, p. 333. (< Theromorpha.)
1889 R, p. 866. (< Theromora.)
1891 F, p. 645.
1891 N, p. 38.
1891 Z, p. 13.
1894 C.
1896 C.
1896 D.
1896 G.
Cope, E. D. 1896 I.
1898 B, pp. 54, 60.
1900 A, p. 159. (Cotylosauria, Theromora.)
Fürbringer, M. 1900 A, pp. 338, 534, 552, 639, 674. (Theromorpha.)
Günther, A. 1886 A, p. 442. (< Anomodontia.)
Haeckel, E. 1895 A, p. 306. (< Theromora.)
Hay, O. P. 1899 F, p. 682.
Kükenthal, W. 1892 A. (< Theromorpha.)
Lydekker, R. 1890 A, p. 112. (< Anomodontia, Pariasauria.)
Osborn, H. F. 1898 B. (< Theromora.)
1899 B, p. 95.
Seeley, H. G. 1889 A, p. 288. (< Pareiasauria.)
1892 A. (< Pareiasauria.)
1895 A, p. 998. (Pareiasauria.)
Steinmann and Döderlein 1890 A, p. 622. (< Theromorpha.)
Woodward, A. S. 1898 B, p. 145. (Pariasauria, part.)
Zittel, K. A. 1890 A, p. 553 (< Theromorpha); p. 570 (Pareiasauria).

The *Pareiasauria* are a related but probably distinct group.

DIADECTIDÆ.

Cope, E. D. 1880 A. p. 45.
Baur and Case 1899 A.
Cope, E. D. 1880 H.
1882 B, p. 448.
1883 K, p. 106.
1886 A.
1888 U.
1888 BB, p. 288.
Cope, E. D. 1896 G, pp. 439, 441.
1896 I, p. 130.
1898 B, p. 60.
Lydekker, R. 1890 A, p. 100.
Marsh, O. C. 1878 C, p. 410. (Nothodontidæ.[1])
Nicholson and Lydekker 1889 A, p. 1061.
Zittel, K. A. 1890 A, p. 581.

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[1] This family is assigned to the *Diadectidæ* on the authority of Drs. Baur and Case, as above cited.

DIADECTES Cope. Type *D. sideropelicus* Cope.

Cope, E. D. 1878 B. p. 505.
1878 U.
1880 A, p. 45.
1880 H.
1888 U, p. 916, pl. xvi.
1896 G, p. 441.
1896 I, pp. 131, 133.
Miller, S. A. 1889 A, p. 620.
Zittel, K. A. 1890 A, p. 582.

Diadectes biculminatus Cope.

Cope, E. D. 1896 I, p. 132, text fig. 3.
1878 B, p. 505. ("No. 2" of D. sideropelicus.)
Permian; Texas.

Diadectes latibuccatus Cope.

Cope, E. D. 1878 B, p. 505.
1880 H.
1881 K, p. 163. (Empedocles.)
1883 H, p. 634. (Empedias.)
1888 BB, p. 288. (Empedias.)
1896 G, p. 442. (Empedias.)
Cope, E. D. 1896 I, p. 131.
Permian; Texas.

Diadectes phaseolinus Cope.

Cope, E. D. 1880 A, p. 46.
1881 K, p. 163.
1883 H, p. 634. (Empedias.)
1886 A.
1888 U, p. 916, pl. xvi, fig. 3.
1888 BB, p. 288. (Empedias.)
1896 G, p. 442. (Empedias.)
1896 I, p. 132, text fig. 2.
Permian; Texas.

Diadectes sideropelicus Cope.

Cope, E. D. 1878 B, p. 505.
1878 U.
1881 K, p. 164.
1888 BB, p. 288.
1896 I, p. 133.
Lydekker, R. 1890 A, p. 104.
Permian; Texas.

EMPEDIAS Cope. Type *E. alatus* Cope.

Cope, E. D. 1883 H, p. 634. (To replace Empedocles, preoccupied.)
Baur, G. 1897 B, p. 150.
Cope, E. D. 1878 B, pp. 516, 529. (Empedocles.)
1878 U.
1880 A, p. 46. (Empedocles.)
1880 H. (Empedocles.)
1896 G, p. 441.
1896 I, p. 131.
Lydekker, R. 1890 A, p. 101.
Miller, S. A. 1889 A, p. 621.
Seeley, H. G. 1888 H, p. 187.
1889 A, p. 284.
1895 A, p. 1009.
Steinmann and Döderlein 1890 A, p. 623. (Empedocles.)
Zittel, K. A. 1890 A, p. 581.

Empedias alatus Cope.

Cope, E. D. 1878 B, p. 517. (Empedocles.)
1878 U. (Empedocles.)
1881 K, p. 164. (Empedocles.)
1888 BB, p. 288.
Permian; Texas.

This species is not included by Professor Cope in either the list contained in Cope 1896 G, or in that of Cope 1896 I.

Empedias fissus Cope.

Cope, E. D. 1883 H, p. 634.
1888 BB, p. 288.
1896 G, p. 442.
1896 I, p. 132, text fig. 4.
Permian; Texas.

Empedias molaris Cope.

Cope, E. D. 1878 Z. (Diadectes.)
1880 A, p. 47. (Empedocles.)
1880 H. (Empedocles.)
1881 K, p. 164. (Empedocles.)
1883 H, p. 634.
1886 A. (Empedias.)
1888 BB, p. 288.
1891 N, p. 38, fig. 17.
1896 G, p. 442.
1896 I, p. 131.
Kükenthal, W. 1892 A.
Lydekker, R. 1890 A, p. 102, figs. 20–22.
Seeley, H. G. 1888 H, p. 188, fig. 5.
Wortman, J. L. 1896 A, p. 383.
Zittel, K. A. 1890 A, p. 581, fig. 524.
Permian; Texas.

BOLBODON Cope. Type *B. tenuitectus* Cope.

Cope, E. D. 1896 I, p. 134.

Bolbodon tenuitectus Cope.

Cope, E. D. 1896 I, p. 134, text fig. 1.
Permian; Texas.

CHILONYX Cope. Type *Bolosaurus rapidens* Cope.

Cope, E. D. 1883 H, p. 631.
Baur, G. 1897 B, p. 150.
Cope, E. D. 1883 P.
Cope, E. D. 1892 Z, p. 13.
1896 G, p. 441.
1896 I, p. 131.

Cope, E. D. 1898 B, p. 57, pl. i, fig. 2.
Lydekker, R. 1890 A, pp. 67, 95, 111.
Miller, S. A. 1889 A, p. 619.
Seeley, H. G. 1895 A, p. 1009.
Zittel, K. A. 1890 A, p. 582.

Chilonyx rapidens Cope.

Cope, E. D. 1878 B, p. 507. (Bolosaurus.)
Cope, E. D. 1883 H, p. 631.
1883 P.
1888 BB, p. 288.
1892 Z, p. 25, pl. i, fig. 2.
1894 B, pl. x, fig. 2.
1896 G, p. 442, pl. viii, fig. 6.
1896 I, p. 131.
Permian; Texas.

Nothodon Marsh. Type *N. lentus* Marsh.

Marsh, O. C. 1878 C, p. 410.
Baur and Case 1899 A, p. 4.
Credner, H. 1888 A, p. 555.
Zittel, K. A. 1890 A, p. 574.

Nothodon lentus Marsh.

Marsh, O. C. 1878 C, p. 410.
Baur and Case 1899 A, p. 4.
Permian; New Mexico.

PARIOTICHIDÆ.

Cope, E. D. 1883 H, p. 631.
Case, E. C. 1899 A, p. 238.
Cope, E. D. 1888 BB, p. 287.
1896 G, pp. 439, 442.
Lydekker, R. 1890 A, p. 112.
Nicholson and Lydekker 1889 A, p. 1056.
Zittel, K. A. 1890 A, p. 580.

Pariotichus Cope. Type *P. brachyops* Cope.

Cope, E. D. 1878 B, pp. 508, 529.
Baur, G. 1897 B, p. 150.
Case, E. C. 1899 A, p. 231.
Cope, E. D. 1878 B, pp. 508, 529. (Ectocynodon, type *E. ordinatus* Cope.)
1879 A, p. 34
1882 B, p. 450. (Ectocynodon.)
1883 H, p. 631. (Pariotichus, Ectocynodon.)
1892 Z, p. 14.
1896 C.
1896 G, p. 443.
1898 B, p. 57, fig. 3.
Miller, S. A. 1889 A, p. 621 (Ectocynodon); p. 624 (Pariotichus).
Nicholson and Lydekker 1889 A, p. 1056. (Pariotichus, Ectocynodon.)
Seeley, H. G. 1895 A, p. 998.
Zittel, K. A. 1890 A, p. 581. (Pariotichus, Ectocynodon.)

Pariotichus aduncus Cope.

Cope, E. D. 1896 I, p. 135.
Permian; Texas.

Pariotichus aguti Cope.

Cope, E. D. 1882 B, p. 451. (Ectocynodon.)
1888 BB, p. 287. (Ectocynodon.)
1896 C, pl. vii, *a*.
Cope, E. D. 1896 G, pp. 444, 445, pl. vii.
Permian; Texas.

Pariotichus brachyops Cope.

Cope, E. D. 1878 B, p. 508.
1881 K, p. 163.
1888 BB, p. 287.
1896 G, p. 445.
Permian; Texas.

Pariotichus incisivus Cope.

Cope, E. D. 1888 BB, p. 290. (Ectocynodon.)
Case, E. C. 1899 A, p. 231, figs. 1–7.
1900 A, p. 720.
Cope, E. D. 1896 G, p. 445.
Permian; Texas.

Pariotichus isolomus Cope.

Cope, E. D. 1896 G, pp. 445, 446.
Permian; Texas.

Pariotichus ordinatus Cope.

Cope, E. D. 1878 B, p. 508. (Ectocynodon.)
1881 K, p. 163. (Ectocynodon.)
1888 BB, p. 287. (Ectocynodon.)
1896 G, pp. 446, 447.
Permian; Texas.

Isodectes Cope. Type *Pariotichus megalops* Cope.

Cope, E. D. 1896 G, p. 442.

To this genus Cope has also referred *Tuditanus punctulatus*, which, however, has here been retained under *Tuditanus*.

Isodectes megalops Cope.

Cope, E. D. 1883 H, p. 630. (Pariotichus.)
Cope, E. D. 1888 BB, p. 287. (Pariotichus.)
1892 Z, p. 25, pl. i, fig. 3. (Pariotichus.)
1894 B, pl. x, fig. 3. (Pariotichus.)
1896 G, p. 442.
Permian; Texas.

CAPTORHINUS Cope. Type *C. angusticeps* Cope.

Cope, E. D. 1896 G, p. 443.

Captorhinus angusticeps Cope.

Cope, E. D. 1896 G, p. 443.
Permian; Texas.

PANTYLUS Cope. Type *P. cordatus* Cope.

Cope, E. D. 1881 A, p. 79.
Baur, G. 1897 B, p. 150.
Cope, E. D. 1882 HH.
1883 H, p. 681.
1892 Z, p. 14.
1896 G, pp. 442, 449.
1898 B, p. 57, fig. 4.
Miller, S. A. 1889 A, p. 624.
Seeley, H. G. 1895 A, p. 998.
Zittel, K. A. 1890 A, p. 581.

Pantylus coïcodus Cope.

Cope, E. D. 1896 G, p. 450.
Permian; Texas.

Pantylus cordatus Cope.

Cope, E. D. 1881 A, p. 79.
1881 K, p. 163.
1888 BB, p. 287.
1892 Z, p. 25, pl. i, fig. 4.
1894 B, pl. x, fig. 4.
1896 G, p. 449.
Permian; Texas.

HYPOPNOUS Cope. Type *H. squaliceps* Cope.

Cope, E. D. 1896 G, p. 450.

Hypopnous squaliceps Cope.

Cope, E. D. 1896 G, p. 451, pl. viii, figs. 3–5.
Permian; Texas.

HELODECTES Cope. Type *H. paridens* Cope.

Cope, E. D. 1880 A, pp. 45, 48.
1896 G, p. 442.
Miller, S. A. 1889 A, p. 622.
Zittel, K. A. 1890 A, p. 582.

Helodectes isaaci Cope.

Cope, E. D. 1880 A, p. 49.
1881 K, p. 164.
Cope, E. D. 1888 BB, p. 288.
Permian; Texas.

Helodectes paridens Cope.

Cope, E. D. 1880 A, p. 48.
1881 K, p. 164.
1888 BB, p. 288.
Permian; Texas.

PAREIASAURIDÆ.

Cope, E. D. 1896 G, pp. 437, 439.
1896 I, p. 137.
Haeckel, E. 1895 A, p. 308. (Pareosaurida.)
Lydekker, R. 1890 A, p. 112.
Seeley, H. G. 1888 D. (Pareiasaurus.)
1889 A. (Pareiasaurus.)
1892 A. (Pareiasaurus.)

LABIDOSAURUS Cope. Type *Pariotichus hamatus* Cope.

Cope, E. D. 1896 I, p. 136.
Baur G. 1897 B, p. 150.

Labidosaurus hamatus Cope.

Cope, E. D. 1896 G, p. 448, pl. viii, figs. 1, 2. (Pariotichus.)
1896 I, p. 136.
Permian; Texas.

Order CHELYDOSAURIA Cope.

Cope, E. D. 1898 B, pp. 54, 61.
Hay, O. P. 1899 F, p. 682.

OTOCŒLIDÆ.

Cope, E. D. 1896 D.
Baur, G. 1896 B, p. 569.
Cope, E. D. 1896 I, p. 123.

OTOCŒLUS Cope. Type *O. testudineus* Cope.

Cope, E. D. 1896 D.
Baur, G. 1896 B, p. 569.
    1897 B, p. 150.
Cope, E. D. 1896 I, p. 123.
    1897 A, p. 315.
Woodward, A. S. 1898 B, p. 149.

Otocœlus mimeticus Cope.

Cope, E. D. 1896 I, p. 123, pl. ix, fig. 1.
Cope, E. D. 1896 E, pl. xxii, fig. 11. (No description; called on plate O. testudineus.)
Permian; Texas.

Otocœlus testudineus Cope.

Cope, E. D. 1896 D.
    1896 E, pl. xxi, fig. 2.
    1896 I, p. 124, pls. vii, viii; pl. ix, fig. 2.
Permian; Texas.

CONODECTES Cope. Type *C. favosus* Cope.

Cope, E. D. 1896 D.
Baur, G. 1896 B, p. 569.
Cope, E. D. 1896 I, pp. 124, 129.

Conodectes favosus Cope.

Cope, E. D. 1896 D.
    1896 I, p. 129.
Permian; Texas.

Order ANOMODONTIA Owen.

Owen, R. 1860 A, p. 255.
Cope, E. D. 1878 CC, p. 829.
    1880 A, p. 38.
    1889 R, p. 865.
Fürbringer, M. 1900 A.
Gadow, H. 1898 A, p. 18.
Haeckel, E. 1895 A, p. 314.
Hay, O. P. 1899 F, p. 682.
Lydekker, R. 1890 A, p. 10.
Osborn, H. F. 1898 O, p. 358.
    1900 J, p. 945.
Owen, R. 1881 C, p. 266.
Quenstedt, F. A. 1885 A, p. 218.
Seeley, H. G. 1888 D, p. 101.
    1888 F.
    1889 A.
    1898 A, p. 307.
    1900 A, p. 620.
Woodward, A. S. 1898 B, p. 144, in part; p. 157 (Dicynodontia.)
Zittel, K. A. 1890 A, p. 556.

DICYNODONTIDÆ.

Cope, E. D. 1889 R, p. 865.
Huxley, T. H. 1859 C. ("Dicynodonta.")
Lydekker, R. 1890 A, p. 16.
Osborn, H. F. 1898 B. (Dicynodontia.)

DICYNODON Owen. Type *D. lacerticeps* Owen.

Owen, R., 1845, Quart. Jour. Geol. Soc., i, p. 318.
Hulke, J. W. 1892 A, p. 244, figs. 6, 7.
Huxley, T. H. 1859 C.
Lydekker, R. 1890 A, p. 16.
Osborn, H. F. 1898 R, p. 316.
Owen, R. 1845 D.
    1856 D.
    1856 E.
    1860 F.
    1863 A.
Quenstedt, F. A. 1885 A, p. 218.
Zittel, K. A. 1890 A, p. 564.

Dicynodon rosmarus Cope.

Cope, E. D. 1869 M, p. 232.
    1870 I, p. 445.
An unsatisfactorily described species; its generic identity doubtful.
Triassic; Pennsylvania.

Order PELYCOSAURIA Cope.

Cope, E. D. 1878 B, p. 528.
Baur, G. 1885 E, p. 637.
    1886 M, p. 302.
    1887 A, p. 488.
    1887 C, p. 102. (As part of Theromorpha.)
    1897 A, p. 977.
Baur and Case 1897 A.
    1899 A.
Case, E. C. 1898 A, pp. 70, 73.
Cope, E. D. 1878 CC. (As part of Theromorpha.)
    1880 A. (As part of Theromorpha.)
    1880 J.
Cope, E. D. 1882 B, p. 448.
    1884 I, pp. 38, 43.
    1885 A.
    1885 G. (Theromorpha, part.)
    1885 V.
    1886 O.
    1888 U, p. 915.
    1888 AA, p. 244.
    1889 R, p. 866. (As part of Theromora.)
    1891 F, p. 645. (Theriodontia.)
    1891 N, p. 38. (Theriodontia.)
    1892 R.

Cope. E. D. 1894 C.
1897 A, p. 316.
1898 B, pp. 55, 67.
Fürbringer, M. 1888 A.
1900 A.
Gadow, H. 1898 A, p. 18. (Theriodontia.)
Haeckel, E. 1895 A, p. 308.
Hay, O. P. 1899 F, p. 68.
Lydekker, R. 1890 A, p. 66. (Theriodontia.)
Marsh, O. C. 1898 B, p. 407. (Theriodontia.)
Nicholson and Lydekker 1889 A, p. 1057. (Theriodontia.)
Osborn, H. F. 1898 A, p. 147. (Theriodontia.)
1898 B, p. 177.
1898 R, p. 315. (Theriodontia.)
1899 B, p. 95. (Theriodontia.)
Owen, R. 1876 B. (Theriodontia.)
1881 B. (Theriodontia.)
1881 C. (Theriodontia.)
Seeley, H. G. 1889 A, p. 282.
1895 A, p. 1007.
Steinmann and Döderlein 1890 A, p. 622.
Woodward, A. S. 1898 B, p. 186.
Zittel, K. A. 1890 A, pp. 554, 572.

CLEPSYDROPIDÆ.

Cope, E. D. 1884 I, p. 38.
Baur and Case, 1899 A.
Cope, E. D. 1882 B, p. 450. (Edaphosauridæ.)
1883 H, p. 631. (Edaphosauridæ.)
1885 A, p. 477.
1888 BB, p. 287.
1898 B, p. 67.
Fürbringer, M. 1900 A.
Lydekker, R. 1890 A, p. 104.
Marsh, O. C. 1878 C, p. 410. (Sphenacodontidæ.)
Nicholson and Lydekker 1889 A, p. 1059.
Zittel, K. A. 1890 A, p. 574. (Cynodontia.)

The family *Sphenacodontidæ* proposed by Professor Marsh, is assigned to the *Clepsydropidæ* on the authority of Drs. Baur and Case, as cited above.

CLEPSYDROPS Cope. Type *C. collettii* Cope.

Cope, E. D. 1875 T, p. 407.
Baur and Case 1897 A.
1899 A.
Case, E. C. 1900 A, p. 711.
Cope, E. D. 1878 B, pp. 510, 529.
1878 J.
1878 U.
1878 DD.
1879 A, p. 34.
1881 K, p. 168.
1885 A.
1886 O.
1888 O.
1888 AA.
1892 Z, p. 11 (Diopeus, type *C. leptocephalus*); p. 14 (Clepsydrops).
Kingsley and Ruddick 1900 A, p. 229.
Lydekker, R. 1890 A, p. 105.
Miller, S. A. 1889 A, p. 619.
Nicholson and Lydekker 1889 A, p. 1059.
Seeley, H. G. 1889 A, pp. 284, 288.
1895 A, p. 998.
1895 B, pp. 111, 119.
Zittel, K. A. 1890 A, p. 574.

Clepsydrops collettii Cope.

Cope, E. D. 1875 T, p. 407.
Baur and Case 1899 A, p. 1.
Case, E. C. 1900 A, pp. 711, 720, pl. ii, figs. 1*a*–3*b*; pl. iv, figs. 7*a*–7*d*.
Cope, E. D. 1877 F, p. 196.
1877 N, p. 61.
1881 K, p. 163.
1884 I, p. 38.
1888 BB, p. 287.
Williston, S. W. 1898 J, p. 121.
Permian; Illinois, Kansas?.

Clepsydrops leptocephalus Cope.

Cope, E. D. 1884 I, p. 30, pl. 1, figs. 1–5.
Baur and Case 1897 A, p. 116.
1899 A, p. 13.
Case, E. C. 1900 A, p. 720.
Cope, E. D. 1884 EE, pl. xxxviii, figs. 1, 2.
1884 GG, p. 1253.
1885 A, figs. 1, 2.
1885 V.
1888 BB, p. 287.
1892 Z, p. 11, pl. ii, figs. 6, 8. (Diopeus.)
1897 A, p. 318. (Diopeus.)
Zittel, K. A. 1890 A, p. 574.
Permian; Texas.

Clepsydrops limbatus Cope.

Cope, E. D. 1877 F, p. 196.
Baur and Case 1899 A, p. 3.
Cope, E. D. 1878 B, p. 515. (Embolophorus?)
1880 Q.
Permian; Texas.

Clepsydrops macrospondylus Cope.

Cope, E. D. 1884 I, p. 35.
Baur and Case 1899 A, p. 14.
Cope, E. D. 1888 BB, p. 287.
Permian; Texas.

Clepsydrops natalis Cope.

Cope, E. D. 1878 B, pp. 509, 529.
Case, E. C. 1900 A, p. 717.
Cope, E. D. 1881 K, p. 163.
1884 I, pp. 38, 42.
1884 EE, pl. xxxviii, fig. 6.
1884 HH, p. 1255.
1885 A, fig. 6.
1888 BB, p. 287.
1892 Z.
Seeley, H. G. 1889 A, p. 290.
Zittel, K. A. 1890 A, p. 574.
Permian; Texas.

Clepsydrops pedunculatus Cope.

Cope, E. D. 1877 N, p. 62.
Baur and Case 1899 A, p. 2.
Case, E. C. 1900 A, p. 713, pl. ii, figs. 4*a*–5*d*.
Cope, E. D. 1881 K, p. 163.
1888 BB, p. 287.
Permian; Illinois.

Clepsydrops vinslovii Cope.

Cope, E. D. 1877 N, p. 61.
Baur and Case 1899 A, p. 2.
Case, E. C. 1900 A, p. 714, pl. ii, figs. 7*a*–7*d*.
Cope, E. D. 1881 K, p. 163.
1888 BB, p. 287.
Permian; Illinois.

DIMETRODON Cope. Type *D. incisivus* Cope.

Cope, E. D. 1878 B, pp. 512, 529.
Ameghino, F. 1896 A, p. 487.
Baur and Case 1897 A.
1899 A.
Case, E. C. 1897 A.
1899 A.
Cope, E. D. 1880 A, p. 42, pl. vi.
1881 K, p. 163.
1886 J.
1888 AA, p. 244.
1888 BB, p. 292.
1888 DD, p. 363.
1889 C, p. 226.
1897 A, p. 315.
Miller, S. A. 1889 A, p. 620.
Nicholson and Lydekker 1889 A, p. 1059.
Osborn, H. F. 1888 G, p. 222, fig. 8.
Seeley, H. G. 1889 A, p. 283.
1895 A, p. 1007.
1895 B, p. 110.
Steinmann and Döderlein 1890 A, p. 624.
Wortman, J. L. 1886 A, p. 383.
Zittel, K. A. 1890 A, p. 576.

Dimetrodon gigas Cope.

Cope, E. D. 1878 U. (Clepsydrops.)
Baur and Case 1899 A, p. 12.
Cope E. D. 1878 B, p. 515.
1881 K, p. 163.
Cope, E. D. 1888 BB, p. 287.
Permian; Texas.

Dimetrodon incisivus Cope.

Cope, E. D. 1878 U. (Clepsydrops.)
Baur and Case 1897 A, figures.
1899 A, p. 12, pls. i–iii.
Case, E. C. 1897 A, figs. 1–4.
Cope, E. D. 1878 B, p. 512.
1881 A, p. 81.
1881 K, p. 163.
1886 J.
1888 BB, pp. 287, 292.
Seeley, H. G. 1889 A, p. 283.
Zittel, K. A. 1890 A, p. 576, fig. 519.
Permian; Texas.

Dimetrodon rectiformis Cope.

Cope, E. D. 1878 B, p. 514.
1881 K, p. 163.
1888 BB, p. 287.
Permian; Texas.

Dimetrodon semiradicatus Cope.

Cope, E. D. 1881 A, p. 80.
1881 K, p. 163. (D. biradicatus.)
1888 BB, p. 287.
Permian; Texas.

NAOSAURUS Cope. Type *N. claviger* Cope.

Cope, E. D. 1886 J.
Baur and Case 1899 A.
Cope, E. D. 1892 Z, p. 14.
1897 A, p. 316.
Fritsch, A. 1895 B, p. 2.
Lydekker, R. 1890 A, p. 106.
Seeley, H. G. 1889 A, p. 283.
1895 A, p. 998.
Zittel, K. A. 1890 A, p. 576.

Naosaurus claviger Cope.

Cope, E. D. 1886 J.
1888 BB, pp. 287, 293, pl. ii, figs. 1, 2; pl. iii, figs. 1–3.
1892 Z, pl. ii, fig. 7.
Lydekker, R. 1890 A, p. 107.
Osborn, H. F. 1898 N, pp. 842, 844, fig. 4.
1898 Q, p. 7, pl. i, fig. 3.
Zittel, K. A. 1890 A, p. 576, fig. 520.
Permian; Texas.

Naosaurus cruciger Cope.

Cope, E. D. 1878 CC. (Dimetrodon.)
Baur and Case 1899 A, p. 11.
Cope, E. D. 1880 A, p. 44. (Dimetrodon.)
1881 A, p. 82. (Dimetrodon.)
1881 K, p. 163. (Dimetrodon.)
1886 J.
1888 BB, pp. 287, 294, pl. iii, fig. 3.
Lydekker, R. 1890 A, p. 107.
Permian; Texas.

Naosaurus microdus Cope.

Cope, E. D. 1884 I, p. 37. (Edaphosaurus.)
1886 J.
1888 BB, pp. 287, 294, pl. ii, fig. 3.
Permian; Texas.

EDAPHOSAURUS Cope. Type *E. pogonias* Cope.

Cope, E. D. 1882 B, p. 448.
1884 I, p. 37.
1886 A.
1892 Z, p. 15.
Miller, S. A. 1889 A, p. 621.
Seeley, H. G. 1889 A, p. 284.
1895 A, p. 998.
Zittel, K. A. 1890 A, p. 577.

Edaphosaurus pogonias Cope.

Cope, E. D. 1882 B, p. 449.
1888 BB, p. 287.
1892 Z, pl. ii, fig. 5.
Permian; Texas.

EMBOLOPHORUS Cope. Type *E. fritillus* Cope.

Cope, E. D. 1878 B, pp. 518, 529.
1884 I, p. 43.
1885 A, p. 474, figs. 4, 5.
Lydekker, R. 1890 A, p. 108.
Miller, S. A. 1889 A, p. 621.
Seeley, H. G. 1889 A, p. 284.
1895 B, p. 111.
Zittel, K. A. 1890 A, p. 577.

Embolophorus dollovianus Cope.

Cope, E. D. 1888 BB, p. 287.
Cope, E. D. 1884 I, p. 43, pl. 1, figs. 4, 5. ("Embolophorus.")
Lydekker, 1890 A, p. 109. (E. dolloverianus.)
Permian; Texas.

Embolophorus fritillus Cope.

Cope, E. D. 1878 B, p. 518.
1881 K, p. 164.
1884 BB.
Hulke, J. W. 1888 A, p. 423.
Lydekker, R. 1890 A, p. 109.
Permian; Texas.

ARCHÆOBELUS Cope. Type *A. vellicatus* Cope.

Cope, E. D. 1877 E, p. 192.
Case, E. C. 1900 A, p. 715.
Miller, S. A. 1889 A, p. 618.
Zittel, K. A. 1890 A, p. 576.

Archæobelus vellicatus Cope.

Cope, E. D. 1877 E, p. 192.
Case, E. C. 1900 A, p. 715, pl. iii, fig. 1.
Cope, E. D. 1877 N, p. 56. ("Species No. 4.")
1881 K, p. 163.
1888 BB, p. 287.
Permian; Illinois.

LYSOROPHUS Cope. Type *L. tricarinatus* Cope.

Cope, E. D. 1877 E, p. 187.
Case, E. C. 1900 A, p. 714.
Cope, E. D. 1888 BB, p. 287. (Lysorhophus.)
Miller, S. A. 1889 A, p. 623.
Zittel, K. A. 1890 A, p. 576.

Lysorophus tricarinatus Cope.

Cope, E. D. 1877 E, p. 187.
Baur and Case 1899 A, p. 2.
Case, E. C. 1900 A, pp. 714, 717, pl. ii, figs, 12*a*–13*c*.
Cope, E. D. 1881 K, p. 164.
1888 BB, p. 287. (Lysorhophus.)
Permian; Illinois.

THEROPLEURA Cope. Type *T. retroversa* Cope.

Cope, E. D. 1878 B, p. 519.
Baur and Case 1899 A, p. 11.
Cope, E. D. 1880 A, p. 40.
1888 BB, p. 287.
Miller, S. A. 1889 A, p. 626.
Nicholson and Lydekker 1889 A, p. 1060.
Seeley, H. G. 1889 A, p. 283.
Zittel, K. A. 1890 A, p. 576.

Theropleura obtusidens Cope.

Cope, E. D. 1880 A, p. 41.
Baur and Case 1899 A, p. 11.
Cope, E. D. 1881 K, p. 164.
1888 BB, p. 287.
Permian; Texas.

Theropleura retroversa Cope.

Cope, E. D. 1878 B, p. 519.
Cope, E. D. 1881 K, p. 163.
1888 BB, p. 287.
Permian; Texas.

Theropleura triangulata Cope.

Cope, E. D. 1878 B, p. 520.
1881 K, p. 164.
1888 BB, p. 287.
Permian; Texas.

Theropleura uniformis Cope.

Cope, E. D. 1878 B, p. 519.
Baur and Case 1899 A, p. 11.
Cope, E. D. 1880 A, p. 40.
1881 K, p. 163.
1888 BB, p. 287.
Permian; Texas.

OPHIACODON Marsh. Type *O. mirus* Marsh.

Marsh, O. C. 1878 C, p. 411.
Baur and Case 1899 A, p. 5.
Credner, H. 1888 A, p. 555.
Miller, S. A. 1889 A, p. 624.
Zittel, K. A. 1890 A, p. 574.

Ophiacodon grandis Marsh.

Marsh, O. C. 1878 C, p. 411.
Baur and Case 1899 A, p. 5. (Eryops?)
Permian; New Mexico.

Ophiacodon mirus Marsh.

Marsh, O. C. 1878 C, p. 411.
Baur and Case 1899 A, p. 5.
Permian; New Mexico.

SPHENACODON Marsh. Type *S. ferox* Marsh.

Marsh, O. C. 1878 C, p. 410.
Baur and Case 1899 A, p. 4.
Credner, H. 1888 A, p. 555.
Zittel, K. A. 1890 A, p. 574.

Sphenacodon ferox Marsh.

Marsh, O. C. 1878 C, p. 410.
Baur and Case 1899 A, p. 4.
Permian; New Mexico.

BOLOSAURIDÆ.

Cope, E. D. 1878 B, p. 529.
1881 K, p. 164.
1883 P.
Cope, E. D. 1888 BB, p. 288.
Lydekker, R. 1890 A, p. 95.
Nicholson and Lydekker 1889 A, p. 1060.

BOLOSAURUS Cope. Type *B. striatus* Cope.

Cope, E. D. 1878 B, pp. 506, 529.
1878 U.
1888 BB, p. 288.
1890, in Lydekker, R. 1890 A, p. 95.
Miller, S. A. 1889 A, p. 619.
Nicholson and Lydekker 1889 A, p. 1060.
Zittel, K. A. 1890 A, p. 582.

Bolosaurus striatus Cope.

Cope, E. D. 1878 B, p. 506.
1878 U.
1881 K, p. 164.
1888 BB, p. 288.
Permian; Texas.

METAMOSAURUS Cope. Type *M. fossatus* Cope.

Cope, E. D. 1878 B, p. 516.
1888 BB, p. 288.
Miller, S. A. 1889 A, p. 623.
Zittel, K. A. 1890 A, p. 582.
The position of this genus is uncertain.

Metamosaurus fossatus Cope.

Cope, E. D. 1878 B, p. 516.
1881 K, p. 164.
1888 BB, p. 288.
Permian; Texas.

Order TESTUDINES Shaw.

Shaw, G. 1802, Gen. Zool., iii, p. 5.

Unless otherwise indicated, the following authors refer to this order under the name *Testudinata*.

Agassiz, L. 1857 B.
Baur, G. 1885 E, p. 632. (Chelonia.)
1886 G, pp. 687, 740.
1887 A, p. 484.
1887 B.
1887 C, p. 97.
1887 E.
1887 F.
1888 A.
1888 B.
1889 B.
1889 C.
1889 F. p. 472.
1889 H.
1889 J.
1890 D.
1891 B, p. 417.
Baur, G. 1891 C.
1892 A.
1892 D, p. 206.
1893 A.
1893 B.
1894 A.
1895 A.
1895 D.
1896 A.
1896 B.
Bemmelen, J. F. 1896 A.
Bienz, A. 1895 A.
Born, G. 1880 A, p. 68.
Boulenger, G. A. 1889 A. (Chelonia.)
Calori, L. 1894 A.
Case, E. C. 1897 B. (Testudines.)
Cope, E. D. 1869 M, p. 27.
1871 B.
1873 E, p. 648.
1875 X, p. 16.
1882 E, p. 143.

Cope, E. D. 1882 J, p. 986.
1884 O, p. 111.
1885 G, p. 246.
1887 S, p. 334.
1889 R, p. 863.
1891 N, p. 39.
1892 R.
1892 Z, p. 20.
1895 E.
1896 A.
1896 I.
1898 B, pp. 56, 92.
1900 A, p. 160.
Cuvier, G. 1834 A, ix, pp. 347–496, pls. ccxxxix-ccxliii.
Dollo, L. 1884 A.
1886 A. (Rhynchochelones, or Euchelonia.)
1888 C.
1893 C, p. 253. ("Chéloniens.")
Fürbringer, M. 1900 A, pp. 311, 527, 540, 556, 593, 630 (Chelonia.)
Gadow, H. 1889 A, p. 462.
1896 A, p. 41.
1898 A, p. 20. (Chelonia.)
1899 A, p. 35.
Gaupp, E. 1894 A.
1895 B, p. 58.
Gegenbaur, C. 1864 A.
1865 B, p. 35.
1898 A.
Goette, A. 1899 A, p. 407.
Gray, J. E. 1869 B.
1873 B.
Günther, A. 1877 A.
1886 A, p. 445.
1888 A, p. 456. (Chelonia.)
Haeckel, E. 1895 A, p. 316. (Chelonia.)
Hallmann, E. 1837 A, p. 22.
Hay, O. P. 1898 F, p. 929. (Testudines.)
1899 F, p. 682. (Testudines.)
Haycraft, J. B. 1891 A. (Chelonia.)
Hoffmann, C. K. 1876 A.
1878 A.
1879 A.
1890 A.
Hulke, J. W. 1892 A, p. 248.
Huxley, T. H. 1872 A, p. 170. (Chelonia.)
Kehner, F. A. 1876 A.
Kehrer, G. 1886 A, p. 83.
Köstlin, O. 1844 A.
Lang and Rütimeyer 1867 A.
Leidy, J. 1871 C, p. 365.
Lortet, L. 1892 A.
Lydekker, R. 1889 D. (Chelonia.)
1889 E. (Chelonia.)
1889 G. (Chelonia.)
Maack, G. A. 1869 A.
Marsh, O. C. 1877 E. (Chelonia.)
Mehnert, E. 1890 A.
Meyer, H. 1860 D, p. 140.
Mivart, St. G. 1886 A. (Chelonia.)
Monks, S. P. 1878 A.
Müller, J. 1831 A, p. 199. (Testudines.)
Nicholson and Lydekker 1889 A, p. 1082. (Chelonia.)
Owen, R. 1842 A, p. 160. (Chelonia.)
1849 B. (Chelonia.)
1849 C. (Chelonia.)
1860 A, pp. 161–166. (Chelonia.)
1866 A. (Chelonia.)
Parker, W. K. 1864 A.
1868 A, p. 133. (Chelonia.)
1879 B, p. 63.
Peters, W. 1839 B. ("Schildkröten.")
Pictet, F. J. 1853 A, p. 435. ("Chéloniens.")
Portis, A. 1882 A. (Chelonia.)
Rosenberg, E. 1891 A.
Rütimeyer, L. 1873 A.
1874 A.
Seeley, H. G. 1880 A. (Chelonia.)
1900 A, p. 641. ("Chéloniens.")
Segond, L. A. 1873 A, p. 2, *et seq.* (Vernacular name.)
Siebenrock, F. 1897 A.
1898 A.
Stannius, H. 1856 A. (Chelonia.)
Steinmann and Döderlein 1890 A, p. 630.
Strauch A. 1890 A, p. 9. (Chelonia.)
Tomes, C. 1898 A, p. 267. (Chelonia.)
Wiedersheim, R. 1889 A, p. 438.
Wieland, G. R. 1900 B, p. 413.
Woodward, A. S. 1898 B, p. 170. (Chelonia.)
Zittel, K. A. 1890 A, pp. 449, 500.

Suborder ATHECÆ Cope.

Cope, E. D. 1871 B, p. 235.
Baur, G. 1886 G, p. 687.
1888 A.
1889 A.
1890 A.
Boulenger, G. A. 1889 A, pp. 4, 7.
Case, E. C. 1897 B, p. 21.
Cope, E. D. 1875 X, p. 16.
1891 I.
1891 N, p. 39.
1898 B, p. 62.
Dames, W. 1894 A.
Dollo, L. 1886 A, p. 79.
Dollo, L. 1887 A.
1888 C.
Gadow, H. 1890 A, p. 21.
Goette, A. 1899 A, p. 422. (Atheca.)
Günther, A. 1888 A, p. 456.
Haeckel, E. 1895 A, pp. 319, 325. (Atheconia.)
Hay, O. P. 1898 F.
Lydekker, R. 1889 G, p. 223. (Athecata.)
Seeley, H. G. 1880 B, p. 412. (Dermochelyidæ.)
Steinmann and Döderlein 1890 A, p. 633.
Strauch, A. 1890 A, p. 38. (Atheca.)
Woodward, A. S. 1887 C, p. 7.

DERMOCHELYIDÆ.[1]

Fitzinger, 1843, Syst. Rept. (Dermatochelyidæ.)
Agassiz, L. 1857 B, p. 320. (Sphargididæ.)
Baur, G. 1886 G, p. 687.
1887 E.
1888 A.
1889 A.
1889 B, p. 42.
1889 H, p. 55. (Dermochelys.)
1889 J, p. 39.
1890 D, p. 534.
1893 B, p. 678.
1896 B.
Bemmelen, J. F. 1896 A, p. 323.
1896 B, p. 279.
Boulenger, G. A. 1888 A, p. 353.
1889 A, pp. 4, 7. (Sphargididæ.)
Case, E. C. 1897 B.
Dames, W. 1894 A. (Sphargididæ.)
Dollo, L. 1887 A. (Sphargis.)
1888 C. (Sphargididæ.)
Fürbringer, M. 1900 A, p. 632. (Sphargidæ.)
Gervais, P. 1872 A. (Sphargididæ.)
Goette, A. 1899 A, p. 422. ("Dermochelyden.")
Gray, J. E., 1825, Ann. Philos., x. (Sphargidæ.)
1869 B, p. 224. (Sphargididæ.)
Günther, A. 1888 A, p. 456. (Sphargididæ.)
Hay, O. P. 1898 F, p. 931.
Hoffmann, C. K. 1890 A, with plates. (Sphargis.)
Kükenthal, W. 1890 B, p. 240.
1890 C, p. 162.
Lydekker, R. 1889 G, p. 223.
Nicholson and Lydekker 1889 A, p. 1090.
Seeley, H. G. 1880 B.
Siebenrock, F. 1897 A. (Sphargididæ.)
Strauch, A. 1890 A, p. 38. (Sphargida.)
Vaillant, L. 1894 A. (Sphargididæ.)
Wieland, G. R. 1900 A, p. 237.
1900 B, p. 413.
Winckler, T. C. 1869 A, p. 60. (Sphargis.)
Woodward, A. S. 1887 C. (Sphargis.)
Zittel, K. A. 1890 A, p. 517.

Suborder THECOPHORA[2] Dollo.

Dollo, L. 1886 A, pp. 79, 91.
Boulenger, G. A. 1889 A, pp. 4, 11.
Case, E. C. 1897 B.
Dollo, L. 1887 A.
1888 C.
Fraas, E. 1899 A, p. 401. (Proganochelys.)
Gadow, H. 1898 A, p. 20.
Goette, A. 1899 A, p. 426.
Günther, A. 1888 A, p. 457. (Testudinata.)
Haeckel, E. 1895 A, p. 319.
Hay, O. P. 1898 F, p. 940.
Lydekker, R. 1889 G, p. 3. (Testudinata.)
Nicholson and Lydekker 1889 A, p. 1091. (Testudinata.)
Seeley, H. G. 1880 B, p. 412. (Aspidochelyidæ.)
Vaillant, L. 1894 A. (<Craspedota.)

Superfamily PLEURODIRA Cope.

Cope, E. D. 1869 M, p. 156.
Baur, G, 1887 B, p. 101.
1888 B.
1889 H.
1889 J.
1890 D, p. 535.
1891 B, p. 420 (Pleurodira); p. 422 (Amphichelydia).
1891 C, p. 351.
1896 B, p. 566. (Amphichelydia.)
Boulenger, G. A. 1888 A.
1889 A, pp. 5, 187.
1889 B.
Cope, E. D. 1871 B, p. 236.
1872 D.
1891 N, p. 39.
1898 B, p. 63.
Dollo, L. 1886 A.
Duméril and Bibron, 1835, Érp. Gén., ii, p. 175. ("Pleurodères.")
Fraas, E. 1889 A. p. 401. (Proganochelys.)
Fürbringer, M. 1900 A, p. 632.
Gadow, H. 1898 A, p. 21.
Goette, A. 1899 A, p. 430.
Günther, A. 1888 A, p. 458.
Haeckel, E. 1895 A, p. 329. (Pleurodera.)
Hay, O. P. 1898 F, p. 947.
Lydekker, R. 1889 G, p. 158 (Pleurodira); p. 204 (Amphichelydia).
Nicholson and Lydekker 1889 A, p. 1091 (Amphichelydia); p. 1094 (Pleurodira).
Peters, W. 1839 A. (Hydromedusa maximiliani.)
Quenstedt, F. A. 1889 A. (On Psammochelys.)
Siebenrock, F. 1898 A, p. 425.
Steinmann and Döderlein 1890 A, p. 638.
Zittel, K. A. 1890 A, pp. 449, 542.

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[1] References are given to the literature of this family on account of the bearing it has on opinions regarding the evolution and classification of *Testudines*.

[2] This group as here understood is equivalent to that so called by Dollo, *minus* the *Trionychia*.

PLEUROSTERNIDÆ.

Cope, E. D. 1875 X, p. 17.
Baur, G. 1888 B, p. 420.
    1891 B, p. 424 (Pleurosternidæ); p. 428 (Baënidæ).
Cope, E. D. 1882 E, pp. 143, 145. (Baënidæ.)
    1884 O, p. 111 (Pleurosternidæ); pp. 111, 112 (Baënidæ).
    1898 B, p. 63. (Baënidæ; Pleurosternidæ.)
Dollo, L. 1886 A, p. 78. (Pleurosternidæ; Baënidæ.)
Grabbe, A. 1884 A. (Pleurosternon.)
Günther, A. 1888 A, p. 457. (Baënidæ.)
Lydekker, R. 1889 E. (Pleurosternum.)
    1889 G, p. 205.
Nicholson and Lydekker 1889 A, p. 1092.
Owen, R. 1853 B, p. 21. (Pleurosternon.)
Rütimeyer, L. 1873 A, p. 143. (Pleurosternon.)
Steinmann and Döderlein 1890 A, p. 639.
Woodward, A. S. 1898 B, p. 172. (Pleurosternum.)

COMPSEMYS Leidy. Type *C. victus* Leidy.

Leidy, J. 1856 Q, p. 312.
Baur, G. 1890 D, p. 534.
    1891 B, p. 411.
    1896 B, p. 565.
Cope, E. D. 1869 M, p. 124.
    1875 E, p. 91.
    1875 I.
    1875 W, p. 336.
    1877 F, p. 196.
    1882 E, p. 145.
    1884 O, p. 113.
Leidy, J. 1860 A, p. 152.
Lydekker, R. 1889 G, p. 137.
Marsh, O. C. 1890 E, p. 177. (Glyptops, type *G. ornatus.*)
Nicholson and Lydekker 1889 A, p. 1105.
Zittel, K. A. 1890 A, p. 534.

Compsemys lineolatus Cope.

Cope, E. D. 1874 C, p. 30. (Adocus?.)
    1874 B, p. 454. (Adocus?.)
    1875 E, pp. 92, 263, pl. vi, figs. 11, 12. (Adocus.)
    1877 G, p. 573.
  Cretaceous (Laramie); Montana, Colorado, Saskatchewan?.

Compsemys obscurus (Leidy).

Leidy, J. 1856 Q, p. 312. (Emys.)
Cope, E. D. 1869 M, p. 124.
    1874 C, p. 30.
Cope, E. D. 1875 E, p. 261.
    1877 G, p. 573. (Emys.)
Leidy, J. 1860 A, p. 153, pl. xi, fig. 4.
  Cretaceous (Laramie); Montana.

Compsemys plicatulus Cope.

Cope, E. D. 1877 F, p. 196.
Baur, G. 1890 D, p. 534.
    1891 B.
    1896 B, p. 565.
Marsh, O. C. 1890 E, p. 176, pl. vii. (Glyptops ornatus.)
    1897 C, p. 507, figs. 63, 64. (Glyptops ornatus.)
  Jurassic; Colorado, Wyoming.

Compsemys victus Leidy.

Leidy, J. 1856 Q, p. 312.
Cope, E. D. 1869 M, p. 124.
    1874 B, p. 454.
    1874 C, p. 30.
    1875 E, p. 261, pl. vi, figs. 15, 16.
    1875 I. (C. victus?.)
    1877 G, p. 573.
Leidy, J. 1860 A, p. 152, pl. xi, figs. 5–7.
Marsh, O. C. 1897 C, p. 527.
  Cretaceous (Laramie); Montana, Colorado, Saskatchewan?.

Compsemys sp. indet.

Cope, E. D. 1888, CC, p. 301.
  Eocene (Puerco); New Mexico.

BAËNA Leidy. Type *B. arenosa* Leidy.

Leidy, J. 1871 C, p. 367.
Baur, G. 1888 B, p. 422.
    1889 H, p. 58.
    1891 B, p. 425.
Cope, E. D. 1873 E, p. 621.
    1882 E, p. 145.
    1882 J, p. 990.
    1884 O, pp. 112, 144.
    1886 M.
Günther, A. 1888 A, p. 456.
Leidy, J. 1872 L, p. 162. (Chisternon, type *Baëna undata.*)
    1873 B, p. 160 (Baëna); p. 169 (Chisternon).
    1873 S, p. 123.
Nicholson and Lydekker 1889 A, p. 1093.
Steinmann and Döderlein 1890 A, p. 637.
Zittel, K. A. 1890 A, p. 536.

Baëna arenosa Leidy.

Leidy, J. 1870 S, p. 123.
Baur, G. 1891 B, p. 427.
Cope, E. D. 1873 E, p. 623.
    1875 C, p. 36.
    1875 F, p. 96.
    1877 K, p. 52, pl. xxiv, fig. 32.
    1882 J, p. 990, fig. 8.
    1884 O, p. 148, pl. xvii, figs. 1, 2.
Dollo, L. 1888 A, pl. ii, fig. 11.
King, C. 1878 A, p. 404.
Leidy, J. 1871 C, p. 367. (B. arenosa, B. affinis.)
    1871 K, p. 229.
    1872 B, p. 368.
    1873 B, pp. 161, 341, pl. xiii, figs. 1–5.
  Eocene (Bridger); Wyoming: (Wasatch); New Mexico.

Baëna hebraica Cope.

Cope, E. D. 1872 M, p. 463.
1873 E, p. 621.
1884 O, p. 146, pl. xix, figs. 1, 2.
Eocene (Bridger); Wyoming.

Baëna? ponderosa Cope.

Cope, E. D. 1873 E, p. 624.
1884 O, p. 150, pl. xvii, figs. 3–8.
Eocene (Bridger); Wyoming.

Baëna undata Leidy.

Leidy, J. 1871 K, p. 228.
Cope, E. D. 1873 E, p. 622.
1884 O, p. 147, pl. xix, figs. 3–5.
Leidy, J. 1871 B, p. 373.
1872 B, p. 369.
1872 L, p. 162. (Chisternon.)
1873 B, pp. 169, 341, pl. xiv, figs. 1, 2. (Chisternon.)
Osborn, Scott, and Speir 1878 A, p. 96.
Eocene (Bridger); Wyoming.

POLYTHORAX Cope. Type *P. missuriensis* Cope.

Cope, E. D. 1876 H, p. 258.
1882 E, p. 145.
1884 O, p. 112.
Nicholson and Lydekker 1889 A, p. 1093.

Polythorax missuriensis Cope.

Cope, E. D. 1876 H, p. 258.
1877 G, p. 573.
Cretaceous (Laramie); Montana.

PELOMEDUSIDÆ.

Cope, E. D. 1868 B, p. 282.
Baur, G. 1888 B, p. 420. (Pelomedusidæ, Podocnemidæ.)
1891 B, p. 424. (Bothremydidæ.)
Boulenger, G. A. 1889 A, p. 191.
Lydekker, R. 1889 G, p. 170.
Nicholson and Lydekker 1889 A, p. 1099.
Steinmann and Döderlein 1890 A, p. 639.

BOTHREMYS Leidy. Type *B. cookii* Leidy.

Leidy, J. 1865 A, pp. 110, 120.
Baur, G. 1889 J, p. 38.
1891 B, p. 423.
Cope, E. D. 1867 A, p. 40.
1869 M, pp. 148, 157.
Günther, A. 1888 A, p. 457.
Lydekker, R. 1889 G, p. 174.
Nicholson and Lydekker 1889 A, p. 1099.
Zittel, K. A. 1890 A, p. 547.

Bothremys cookii Leidy.

Leidy, J. 1865 A, pp. 110, 120, pl. xviii, figs. 4–8.
Cope, E. D. 1869 B, p. 735.
1869 K, p. 89.
1869 M, p. 157.
1875 E, p. 263.
Leidy, J. 1865 D, p. 73.
Maack, G. A. 1869 A, p. 280.
Cretaceous (Green-sand No. 4); New Jersey.

TAPHROSPHYS Cope. Type *T. molops* Cope.

Cope, E. D. 1869, K, p. 90.
Baur, G. 1888 B, p. 421.
1891 B, p. 424.
Cope, E. D. 1869 K, p. 90. (Prochonias, type *Platemys sulcatus* Leidy).
1869 M, p. 157.
1873 E, p. 649.
Günther, A. 1888 A, p. 457.
Lydekker, R. 1889 G, p. 174.
Nicholson and Lydekker 1889 A, p. 1099.
Zittel, K. A. 1890 A, p. 547. (Syn. of Bothremys).

Taphrosphys leslianus Cope.

Cope, E. D. 1869 M, pp. 159, 166 (Taphrosphys); p. 165, line 14 (Prochonias).
1875 E, p. 264.
Cretaceous (Green-sand); New Jersey.

Taphrosphys longinuchus Cope.

Cope, E. D. 1869 M, pp. 159, 162.
1875 E, p. 263.
Cretaceous (Green-sand); New Jersey.

Taphrosphys molops Cope.

Cope, E. D. 1869 M, pp. 158, 159, figs. 43, 44.
1869 B, p. 735.
1869 K, p. 89.
1869 M, pp. 158, 160 (Prochonias enodis); p. 162 (T. molops, var. enodis).
1870 D, p. 274.
1875 E, p. 263.
Zittel, K. A. 1890 A, p. 547. (Bothremys.)
Cretaceous (Green-sand); New Jersey.

Taphrosphys nodosus Cope.

Cope, E. D. 1869 M, pp. 159, 167, pl. i, fig. 16.
1875 E, p. 264.
Cretaceous (Green-sand); New Jersey.

Taphrosphys strenuus Cope.

Cope, E. D. 1869 K, pp. 89, 90. (Prochonias.)
1869 B, p. 735. (T. princeps.)
1869 K, p. 89. (Prochonias princeps.)
1869 M, pp. 160, 167 (Prochonias princeps); pp. 159, 166 B (Taphrosphys); p. 167 (Prochonias).

Cope, E. D. 1875 E, p. 264.
1875 V, p. 34.
1878 EE.

Cretaceous (Green-sand); New Jersey, Georgia, North Carolina.

Cope's species *T. princeps* is last mentioned, and then only incidentally, in 1869 M, pp. 160, 167. It appears to have been regarded by Cope as a synonym of *T. strenuus*. In the Cope collection of reptiles the present writer has found the femur described on p. 166-B of Cope 1869M, and it has written on it, probably by Cope himself, the name "*Prochonias princeps.*"

Taphrosphys sulcatus (Leidy).

Leidy, J. 1856 P, p. 303. (Platemys.)
Cope, E. D. 1869 B, p. 735.
1869 K, pp. 89, 90. (Prochonias.)
1869 M, pp. 159, 164, text figs. 45, 45 *bis* (Taphrosphys); p. 165 (Prochonias).
1875 E, p. 264.
Leidy, J. 1865 A, pp. 109, 120, pl. xix, fig. 4. (Platemys.)
Maack, G. A. 1869 A, p. 281. (Platemys.)
Cretaceous (Green-sand); New Jersey.

PLESIOCHELYIDÆ.

Lydekker, R. 1889 G, p. 183.

PLESIOCHELYS Rütimeyer. Type *P. solodurensis* Rütimeyer.

Rütimeyer L. 1873 A. p. 48.
Lydekker, R. 1889 D, p. 239.
1889 G, p. 196.
Maack, G. A. 1869 A, p. 320. (Stylemys in part; not of Leidy.)
Portis, A. 1878 A, p. 131.
Zittel, K. A. 1890 A, p. 544.

Plesiochelys belviderensis Cragin.

Cragin, F. W. 1894 A, p. 71, pl. ii, figs. 1-8.
Cretaceous (Comanche series); Kansas.

Superfamily CRYPTODIRA Cope.

Cope, E. D. 1869 M, p. 123.
Baur, G. 1889 H.
1889 J.
1890 D, p. 535.
1891 B, p. 419.
1893 B.
Boulenger, G. A. 1889 A, pp. 4, 11.
1889 B.
Cope, E. D. 1871 B, p. 235.
1884 O, p. 111.
1891 N, p. 39.
1898 B, p. 62.
Dollo, L. 1886 A.
Duméril and Bibron, 1835, Érp. Gén., ii, p. 172. ("Cryptodères.")
Fürbringer, M. 1900 A, p. 632.
Gadow, H. 1898, p. 20.
Goette, A. 1899 A, p. 430.
Günther, A. 1888 A, p. 457.
Hay, O. P. 1898 F, p. 947.
Lydekker, R. 1889 G, p. 25.
Nicholson and Lydekker 1889 A, p. 1101.
Williston, S. W., in Williston and Case 1898 A, p. 367.
Zittel, K. A. 1890, pp. 449.

PROTOSTEGIDÆ.

Cope, E. D. 1873 E, p. 649.
Baur, G. 1888 A.
1889 A, pp. 184, 191.
1890 D, p. 534.
Case, E. C. 1897 B.
Cope, E. D. 1875 X, p. 16.
Lydekker, R. 1889 G, p. 228.
Nicholson and Lydekker 1889 A, p. 1089.
Steinmann and Döderlein 1890 A, p. 634.
Wieland, G. R. 1898 A, p. 19.
1900 A, p. 250.

PROTOSTEGA Cope. Type *P. gigas* Cope.

Cope, E. D. 1871 K, p. 175.
Baur, G. 1886 G, p. 687.
1889 A.
1890 D.
1896 B.
Capellini, G. 1884 A.
Case, E. C. 1897 B.
Cope, E. D. 1872 F, p. 334.
1872 L.
1873 E, p. 648.
1875 E, pp. 99, 256.
1884 O, p. 114.
Dollo, L. 1888 C, p. 72.
Goette, A. 1899 A, p. 426.
Hay, O. P. 1895 B.
1898 F, p. 929.
Lydekker, R. 1889 G, pp. vii, 229.
Marsh, O. C. 1877 E, p. 345. (Atlantochelys.)
1877 F. (Atlantochelys.)
Nicholson and Lydekker 1889 A, p. 1089.
Wieland, G. R. 1900 A, pp. 237, 250.
1900 B, p. 416.
Woodward, A. S. 1887 C, p. 9.
Zittel, K. A. 1890 A, p. 519.

Protostega gigas Cope.

Cope, E. D. 1871 K, p. 175.
Capellini, G. 1884 A.
Case, E. C. 1897 B, pls. iv-vi.
Cope, E. D. 1872 F, pp. 323, 335.
1872 L, p. 433.
1875 E, pp. 48, 102, 256, pl. ix, figs. 1-7; pls. x-xiii.
1878 Q.
Dana, J. D. 1876, Man. Geol., ed. ii, p. 466. (Atlantochelys.)
Hay, O. P. 1895 B, pls. iv, v.
Sternberg, C. 1899 A, p. 126, figures.
Wieland, G. A. 1896 A.
1898 A.
1900 A, p. 238.
1900 B, p. 416, figs. 8, 19.
Cretaceous (Niobrara); Kansas.

ARCHELON Wieland. Type *A. ischyros* Wieland.

Wieland, G. R. 1896 A, p. 399.
Hay, O. P. 1898 F, p. 929. (Protostega.)
Wieland, G. R. 1898 A, p. 15. (Protostega.)

Archelon ischyros Wieland.

Wieland, G. R. 1896 A, p. 399, pl. vi, text figs. 2-19.
Case, E. C. 1897 B, p. 52. (Protostega.)
Wieland, G. R. 1898 A, p. 15, pl. ii, text figs. 1, 2 (Protostega.)
Wieland, G. R. 1900 A, p. 237, pl. ii, text figs. 1-3; 6.
1900 B, p. 420, figs. 17, 18.
Williston, S. W. 1897 H, p. 246. (Protostega.)
Cretaceous (Pierre); South Dakota.

Archelon marshii Wieland.

Wieland, G. R. 1900 A, p. 248.
Cretaceous (Pierre); South Dakota.

NEPTUNOCHELYS Wieland. Type *Protostega tuberosa* Cope.

Wieland, G. R. 1900 B, p. 418.

Neptunochelys tuberosa (Cope).

Cope, E. D. 1872 L, p. 433. (Platecarpus, *errore.*)
Baur, G. 1889 A, p. 189.
Cope, E. D. 1869 A, p. 265. (Platecarpus tympaniticus, in part.)
1869 M, pp. 199, 200. (Platecarpus tympaniticus, in part.)
Cope, E. D. 1872 F, p. 334. (Protostega.)
1875 E, p. 257. (Protostega.)
Leidy, J. 1865 A, p. 118, pl. viii, figs. 1, 2. (?Holcodus acutidens, in part.)
1873 B, p. 342. (Atlantochelys.)
Wieland, G. R. 1900 B, p. 418, figs, 9, 10. (Neptunochelys.)
Cretaceous; Mississippi.

ATLANTOCHELYS Agassiz. Type *A. mortoni* Agassiz.

Agassiz, L., in Leidy, J. 1865 A, p. 43.
1849 A, p. 169. (No definition.)
1850 B. (No definition.)
Baur, G. 1889 A, p. 189.
Cope, E. D. 1869 M, p. 185.
Dollo, L. 1888 C, p. 67.
Hay, O. P. 1898 F, p. 930.
Leidy, J. 1873 B, p. 342.
Lydekker, R. 1889 G, p. 229.
Marsh, O. C. 1877 E, p. 345.
1877 F.

Atlantochelys mortoni Agassiz.

Agassiz, L., in Leidy, J. 1865 A, p. 43, pl. viii, figs. 3-5.
Agassiz, L. 1849 A, p. 169. (No description.)
1850 B. (No description.)
Baur, G. 1889 A, p. 189. ("Protostega neptunia.")
Cope, E. D. 1869 M, p. 185.
1872 F, p. 334. (Protostega neptunia.)
1872 L, p. 433. (Protostega neptunia.)
1873 E. (Protostega neptunia.)
Hay, O. P. 1898 F, p. 930.
Leidy, J. 1865 A, p. 117. (Mosasaurus mitchelli, in part.)
1873 B, p. 342.
Wieland, G. R. 1900 B, p. 419, figs. 14-16.
Cretaceous; New Jersey.

THALASSEMYDIDÆ.

Baur, G. 1889 A, p. 191. (Thalassemydidæ, Lytolomidæ.)
Cope, E. D. 1869 M, p. 235. (Propleuridæ.)
1870 T, p. 137. (Propleuridæ.)
1871 C, p. 563. (Propleuridæ.)
1872 B, p. 22. (Propleuridæ.)
1872 D. (Propleuridæ.)
1879 A, p. 36. (Propleuridæ.)
1882 E, pp. 143, 144. (Propleuridæ.)
1882 J, p. 989. (Propleuridæ.)
1884 O, pp. 111, 112. (Propleuridæ.)
Cope, E. D. 1887 R. (Propleuridæ.)
Dollo, L. 1884 A, p. 71. (Thalassemydidæ.)
1886 A, p. 89. (Cheloniidæ, in part.)
1888 A. (Propleuridæ.)
Lortet, L. 1892 A, p. 24. (Thalassemydidæ.)
Lydekker, R. 1889 A, p. 36. (Propleuridæ.)
1889 G, p. 25. (Cheloniidæ, in part.)
Nicholson and Lydekker 1889 A, p. 1112. (Cheloniidæ.)
Zittel, K. A. 1890 A, p. 525 (Chelonemydidæ); p. 527 (Thalassemydidæ).

OSTEOPYGIS Cope. Type *O. emarginatus* Cope.

Cope, E. D. 1868 E, p. 147.
Baur, G. 1889 A, p. 186.
1889 B, p. 42.
Case, E. C. 1897 B, pp. 33, 43, 50.
Cope, E. D. 1869 K, p. 88. (Osteopygis; Propleura, type *Chelone sopita* Leidy.)
1869 M, pp. 132, 235 (Osteopygis); pp. 138, 235 (Propleura); pp. 143, 235 (Catapleura, type *C. repanda*).
1875 E, p. 257.
1882 E, p. 144. (Osteopygis, Propleura, Catapleura.)
1884 O, p. 112. (Osteopygis, Propleura, Catapleura.)
Lydekker R. 1889 A, p. 61.
1889 D, p. 233. (Lytoloma.)
1889 G, p. 52. (Syn.? of Lytoloma.)
Nicholson and Lydekker 1889 A, p. 1113. (Lytoloma.)
Zittel, K. A. 1890 A, p. 526.

Osteopygis chelydrinus Cope.

Cope, E. D. 1869 K, p. 89.
1868 E, p. 147. (No description.)
1869 B, p. 735. (No description.)
1869 M, pp. 135, 138, pl. vii, fig. 8.
1875 E, p. 259. (Catapleura.)
Cretaceous; New Jersey.

Osteopygis emarginatus Cope.

Cope, E. D. 1869 K, p. 89.
1869 B, p. 735.
1868 E, p. 147. (No description.)
1869 M, pp. 135, 136, 235, pl. vii, fig. 3.
1875 E, p. 259.
Cretaceous; New Jersey.

Osteopygis erosus Cope.

Cope, E. D. 1875 E, p. 258.
Cretaceous; New Jersey.

Osteopygis platylomus Cope.

Cope, E. D. 1869 K, p. 89.
1869 B, p. 735.
1869 M, pp. 135, 137, and ii, figs. 38, 39.
1875 E, p. 258.
Cretaceous; New Jersey.

Osteopygis ponderosus (Cope).

Cope, E. D. 1871 G, p. 46. (Catapleura.)
1875 E, p. 259. (Catapleura.)
Cretaceous; New Jersey.

Osteopygis repandus (Cope).

Cope, E. D. 1869 M, p. 142, pl. vii, fig. 2. (Catapleura.)
1868 E. (Osteopygis; no description.)
1869 B, p. 734. (Propleura; no description.)
1875 E, p. 259. (Catapleura.)
Cretaceous; New Jersey.

Osteopygis sopitus (Leidy).

Leidy, J. 1865 A, pp. 104, 119. (Chelone; not p. 105, pl. xix, fig. 5 = Lytoloma angusta Cope.)
Cope, E. D. 1868 E, p. 147. (Osteopygis.)
1869 B, p. 735. (Propleura.)
1869 K, p. 88. (Propleura.)
1869 M, pp. 140, 235, pl. vii, figs. 4-7. (Propleura.)
1875 E, p. 258.
Maack, G. A. 1869 A, pp. 238, 283. (Chelone.)
Cretaceous; New Jersey.

PERITRESIUS Cope. Type *Chelone ornata* Leidy.

Cope, E. D. 1869 K, p. 88.
1869 M, p. 150.
1882 E, p. 144.
1884 O, p. 112.
Zittel, K. A. 1890 A, p. 526.

The systematic position of this genus is doubtful.

Peritresius ornatus (Leidy.)

Leidy, J. 1856 P, p. 303. (Chelone.)
Cope, E. D. 1869 B, p. 735.
1869 K, p. 88.
1869 M, p. 150.
1875 E, p. 260.
1878 EE.
Leidy, J. 1865 A, pp. 105, 119, pl. xviii, fig. 10. (Chelone.)
Maack, G. A. 1869 A, p. 283. (Chelone.)
Cretaceous; New Jersey, Georgia.

LYTOLOMA Cope. Type *L. angusta* Cope.

Cope, E. D. 1869 K, p. 88.
Baur, G. 1889 B, p. 43.
1889 J, p. 39. (Euclastes.)
Case, E. C. 1897 B, pp. 44, 50.
Cope, E. D. 1867 A, p. 39. (Euclastes, type *E. platyops*.)
1869 M, pp. 131, 144, 235 (Lytoloma); pp. 131, 148 (Euclastes).
1882 E, p. 144.
1884 O, p. 112.
1887 R.
Dames, W. 1894 A, p. 203.
Dollo, L. 1888 A.
Lydekker, R. 1889 A, p. 61.
1889 D, p. 233.
1889 G, p. 51.
Nicholson and Lydekker 1889 A, p. 1113.
Seeley, H. G. 1871 B. (Glossochelys, type *E. harvicensis*.)
Wieland, G. R. 1900 B, p. 416, fig. 6.
Zittel, K. A. 1890 A, p. 526. (Euclastes.)

Lytoloma angusta Cope.

Cope, E. D. 1869 K, p. 89.
1869 M, p. 145, pl. xi, fig. 1.
1875 E, p. 257.
Leidy, J. 1865 A, p. 105, pl. xix, fig. 5. (Chelone sopita, in part.)
Cretaceous (Green-sand No. 5): New Jersey.

Lytoloma jeanesii Cope.

Cope, E. D. 1869 M, p. 145.
1869 B, p. 735. (Propleura; no description.)
1875 E, p. 257.
Cretaceous (Green-sand No. 5): New Jersey.

Lytoloma platyops (Cope.)

Cope, E. D. 1867 A, p. 41. (Euclastes.)
1869 B, p. 735. (Euclastes.)
1869 K, p. 89. (Euclastes.)
1869 M, p. 149, pl. vii, fig. 9. (Euclastes.)
1875 E, p. 259. (Euclastes.)
Cretaceous (Green-sand No. 5); New Jersey.

Lytoloma sp. indet.

Clark, W. B. 1895 A, p. 4. (Euclastes.)
1897 A, p. 59. (Euclastes.)
Eocene; Maryland.

SYLLOMUS Cope. Type *S. crispatus* Cope.

Cope, E. D. 1896 J, p. 139.

Syllomus crispatus Cope.

Cope, E. D. 1896 J, p. 139.
Neocene; Virginia.

TOXOCHELYIDÆ.

Baur, G. 1895 D, p. 569. (Toxochelydæ.)
1896 B, p. 564.
Hay, O. P. 1896 A, p. 106.

TOXOCHELYS Cope. Type *T. latiremis* Cope.

Cope, E. D. 1873 I, p. 10.
Baur, G. 1889 H, p. 58.
1895 D, p. 569.
Case, E. C. 1897 B, p. 28.
1898, in Williston and Case 1898 A, p. 370.
Cope, E. D. 1872 BB. (No name.)
1875 E, pp. 98, 300.
1877 D, p. 176.
Hay, O. P. 1896 A.
1898 F, p. 935.
Lydekker, R. 1889 G, p. 129.
Nicholson and Lydekker 1889 A, p. 1104.
Wieland, G. R. 1900 B, p. 418.
Zittel, K. A. 1890 A, pp. 526, 534.

Toxochelys brachyrhinus Case.

Case, E. C., in Williston and Case 1898 A, p. 378, pl. lxxxiv.
Cretaceous; Kansas.

Toxochelys latiremis Cope.

Cope, E. D. 1873 I, p. 10.
Case, E. C., in Williston and Case 1898 A, p. 371, pl. lxxix; pl. lxxx, figs. 1, 2; pl. lxxxi, figs. 1-8, 10-13; pl. lxxxii, figs. 1-3, 6; pl. lxxxiii, figs. 2-4.
Cope, E. D. 1872 BB, p. 129. (Description; no name.)
1875 E, pp. 98, 260, pl. viii, fig. 12.
1877 D, p. 176.
Hay, O. P. 1896 A, pls. xiv, xv.
Leidy, J. 1873 B, p. 279, pl. xxxvi, figs. 17-21. (? Cynocercus incisus.)
Wagner, G. 1898 A, p. 201, text figs. 1, 2.
Wieland, G. R. 1900 B, p. 418.
Cretaceous (Niobrara and Pierre); Kansas.

Toxochelys serrifer Cope.

Cope, E. D. 1875 E, p. 299.
Case, E. C., in Williston and Case 1898 A, p. 379, pl. lxxx, figs. 3-9; pl. lxxxii, figs. 4, 5; pl. lxxxiii, fig. 1.
Hay, O. P. 1898 F, p. 935, figs. 1-3.
Cretaceous (Niobrara); Kansas.

CYNOCERCUS Cope. Type *C. incisus* Cope.

Cope, E. D. 1882 H.
1872 F, p. 335.
1875 E, p. 96.
Hay, O. P. 1896 A.
Williston, S. W., in Williston and Case 1898 A, p. 368.
Zittel, K. A. 1890 A, p. 526.

This genus is not improbably identical with *Toxochelys*. If so, *Cynocercus* supersedes *Toxochelys*.

Cynocercus incisus Cope.

Cope, E. D. 1872 H.
1872 F, p. 335.
1872 BB, p. 129.
1874 C, p. 28.
1875 E, pp. 96, 260, pl. viii, figs. 3-5.
Williston, S. W., in Williston and Case 1898 A, p. 368, fig. 6.
Cretaceous (Niobrara); Kansas.

DESMATOCHELYIDÆ.

Williston, S. W. 1894 D.
Williston, S. W., in Williston and Case 1898 A, p. 367.

DESMATOCHELYS Willist. Type *D. lowii* Willist.

Williston, S. W. 1894 D.
1898, in Williston and Case 1898 A, p. 351.

Desmatochelys lowii Willist.

Williston, S. W. 1894 D.
Wieland, G. R. 1900 B, p. 419, fig. 18.
Williston, S. W., in Williston and Case 1898 A, p. 353. pls. lxxiii-lxxviii.
Cretaceous (Niobrara); Nebraska, Kansas.

CHELONIIDÆ.

Gray, J. E., 1825, Ann. Phil. (2), x. (Cheloniadæ.)
Agassiz, L. 1857 B, p. 324. (Chelonoidæ.)
Baur, G. 1889 A.
1889 B.
1890 F, p. 486.
1891 C, p. 350.
1893 B, p. 678.
Bemmelen, J. F. 1896 A.
Boulenger, G. A. 1889 A, p. 180.
Case, E. C. 1897 B.
Cope, E. D. 1869 M, p. 153.
1871 C, p. 130.
1872 D.
1882 E, p. 143.
1884 O, p. 111.
Dollo, L. 1888 C.
Gadow, H. 1899 A, p. 87.
Goette, A. 1899 A.
Gray, J. E. 1873 B, p. 396.
Günther, A. 1888 A, pp. 457, 458.
Hay, O. P. 1896 A.
1898 F, p. 931.
Hoffmann, C. K. 1890 A.
Lydekker, R. 1889 G, p. 25.
Nicholson and Lydekker 1889 A, p. 1111.
Owen, R. 1842 A, p. 168.
Pictet, F. J. 1853 A, p. 458. (Chélonées.)
Siebenrock, F. 1897 A.
1898 A, p. 425.
Steinmann and Döderlein 1890 A, p. 636.
Strauch, A. 1890 A, p. 87.
Zittel, K. A. 1890 A, p. 521.

CHELONIA Brongniart.

Brongniart, A., 1799, Jour. de Science, etc., v, pp. 184, 201.
Agassiz, L. 1857 B, p. 377.
Baur, G. 1889 A.
1889 F, p. 467.
1890 F, p. 486.
1896 B.
Bemmelen, J. F. 1896 B. (Chelone.)
Boulenger, G. A. 1889 A, p. 180. (Chelone.)
Cope, E. D. 1882 E, p. 144.
1884 O, p. 112.
Dollo, L. 1888 A. (Chelone.)
Fürbringer, M. 1900 A. (Chelone.)
Hoffmann, C. K. 1890 A.
Lydekker, R. 1889 A, p. 60. (Chelone.)
1889 D. (Chelone.)
1889 G, p. 27. (Chelone.)
Owen, R. 1842 A, p. 168. (Chelone.)
1849 B. (Chelone.)
Owen, R. 1849 C. (Chelone.)
1851 B, p. 1. (Chelone.)
Peters, W. 1839 B.
Pictet, F. J. 1853 A, p. 459.
Segond, L. A. 1873 A, p. 2. ("Tortue franche.")
Stannius, H. 1856 A.
Strauch, A. 1890 A, p. 37. (Chelone.)
Ubaghs, C. 1875 A.
Winckler, T. C. 1869 A.
Zittel, K. A. 1890 A, p. 523.

No species certainly belonging to this genus have yet been described from North America. For *Chelonia couperi* see Harlan, R. 1842 B, p. 144, pl. iii, figs. 2, 3; but it is probable that the bone there described and figured is not even a portion of a turtle. See also J. H. Couper in Hodson, W. B. 1846 A, p. 46, for mention of this supposed turtle.

PUPPIGERUS Cope. Type *Chelone grandæva* Leidy.

Cope, E. D. 1869 M, p. 235.
1882 E, p. 144.
1884 O, p. 112.
Günther, A. 1888 A, p. 457.
Lydekker, R. 1889 A, p. 61.
1889 D, p. 254. (Syn. of Lytoloma.)
1889 G, p. 52. (Syn. of Lytoloma.)
Nicholson and Lyddeker 1889 A, p. 1113.
Zittel, K. A. 1890 A, p. 527.

Puppigerus grandævus (Leidy.)

Leidy, J. 1851 H, p. 329. (Chelonia.)
Cope, E. D. 1869 B, p. 738. (Chelone.)
1869 M, p. 153 (Chelone); p. 235 (Puppigerus).
Cope, E. D. 1875 H, p. 363.
Leidy, J. 1856 P, p. 303. (Chelone.)
Maack, G. A. 1869 A, p. 283. (Chelone.)
Miocene; New Jersey.

Puppigerus parvitectus Cope.

Cope, E. D. 1869 M, p. 155. (Chelone parvitecta.)
1867 C, p. 143. ("Sp. undet.")
1869 B, p. 738. (Chelone parviscutum: no description.)
1870 T, p. 138. (Chelone parviscutatus.)
1872 Y, p. 15.
Miocene; New Jersey, Maryland.

LEMBONAX Cope. Type *L. polemicus* Cope.

Cope, E. D. 1869 M, p. 168.
1882 J, p. 989.
Zittel, K. A. 1890 A, p. 524.
The position of this genus is very problematical.

Lembonax insularis Cope.

Cope, E. D. 1872 Y, p. 16.
Eocene; New Jersey.

Lembonax polemicus Cope.

Cope, E. D. 1869 M, p. 168.
Eocene; New Jersey.

Lembonax prophylæus Cope.

Cope, E. D. 1872 Y, p. 15.
Eocene; New Jersey.

ADOCIDÆ.

Cope, E. D. 1870 K.
Baur, G, 1888 B, p. 419.
1891 B, p. 430.
Bienz, A. 1895 A. (On Dermatemydidæ.)
Cope, E. D. 1869 M (1870), p. ii.
1870 N.
1871 C, p. 563.
1871 G, p. 43.
1872 D.
Cope, E. D. 1873 E, p. 649.
1875 X, p. 17.
1882 E, p. 145.
1884 O, pp. 111, 113.
1891 F, p. 645.
Dollo, L. 1886 A, p. 78.
Lydekker, R. 1889 G, p. 129.
Nicholson and Lydekker 1889 A, p. 1106.

ADOCUS Cope. Type *Emys beatus* Leidy.

Cope, E. D. 1868 K, p. 235.
Baur, G. 1891 B, p. 428.
Cope, E. D. 1869 K, p. 88.
1869 M, pp. 128, 232, and ii.
1870 G.
1870 K.
1873 E, p. 649.
1875 E, pp. 91, 262.
1882 E, p. 145.
1884 O, p. 113.
1891 F, p. 645.
Günther, A. 1888 A, p. 457.
Lydekker, R. 1889 G, p. 129.
Nicholson and Lydekker 1889 A, p. 1106.
Steinmann and Döderlein 1890 A, p. 637.
Zittel, K. A. 1890 A, p. 536.

Adocus agilis Cope.

Cope, E. D. 1868 K, p. 235.
1869 B, p. 734.
1869 M, pp. 233, 234, and ii.
1870 G, p. 296.
1870 N, p. 549.
1871 G, p. 44.
1875 E, p. 262.
Cretaceous (Green-sand No. 5); New Jersey.

Adocus beatus (Leidy).

Leidy, J. 1865 A, pp. 107, 119, pl. xviii, figs. 1-3. (Emys.)
Baur, G. 1891 B, p. 428.
Cope, E. D. 1868 K, p. 235.
1869 B, p. 734.
1869 M, pp. 129, 233.
1870 G, p. 296.
Cope, E. D. 1870 N, p. 547.
1871 G, p. 43.
1875 E, p. 262.
Marsh, O. C. 1890 E, p. 178, pl. vii, fig. 3. (A. punctatus.)
Cretaceous (Green-sand No. 5); New Jersey.

Adocus pectoralis Cope.

Cope, E. D. 1868 K, p. 236. (Pleurosternum.)
1869 B, p. 734. (Pleurosternum.)
1869 M, p. 130 (Pleurosternum); p. 233 and ii, pl. vii, fig. 1 (Adocus).
1870 G, p. 296.
1871 G, p. 43.
1875 E, p. 262.
Cretaceous (Green-sand No. 5); New Jersey.

Adocus pravus (Leidy).

Leidy, J. 1856 P, p. 303. (Emys.)
Cope, E. D. 1868 K, p. 235.
1869 B, p. 734.
1869 M, pp. 129, 233, 234.
1870 G, p. 297.
1871 G, p. 44.
1875 E, p. 262.
Leidy, J. 1865 A, pp. 108, 120, pl. xix, fig. 1. (Emys.)
Maack, G. A. 1869 A, p. 278. (Emys parva.)
Cretaceous (Green-sand No. 5); New Jersey.

Adocus syntheticus Cope.

Cope, E. D. 1870 N, p. 548.
1870 K.
1871 G, p. 44.
1875 E, p. 262.
Cretaceous (Green-sand No. 5); New Jersey.

AGOMPHUS Cope. Type *Emys turgidus* Cope.

Cope, E. D. 1871 G, p. 46.
Baur, G. 1888 B, p. 595.
1891 B, p. 429.
Cope, E. D. 1873 E, p. 625.
1877 P. (Amphiemys, type *A. oxysternum*).
1882 E, p. 145. (Agomphus, Amphiemys.)

Cope, E. D. 1884 O, p. 113. (Agomphus, Amphiemys.)
1891 F, p. 645.
Lydekker, R. 1889 G, p. 129.
Nicholson and Lydekker 1889 A, p. 1106.
Zittel, K. A. 1890 A, p. 536. (Agomphus, Amphiemys.)

Agomphus firmus (Leidy).

Leidy, J. 1856 P, p. 303. (Emys.)
Cope, E. D. 1868 K, p. 235. (Adocus.)
1869 B, p. 734. (Adocus.)
1869 M, pp. 125, 126. (Emys.)
1870 G, p. 295. (Adocus.)
1871 G, p. 46.
1875 E, p. 262.
Leidy, J. 1865 A, pp. 106, 119, pl. xix, fig. 2. (Emys.)
Maack, G. A. 1869 A, p. 277. (Emys.)
Cretaceous (Green-sand No. 5); New Jersey.

Agomphus oxysternum Cope.

Cope, E. D. 1877 P. (Amphiemys.)
Baur, G. 1888 B, p. 595.
1891 B, p. 429.
Cope, E. D. 1878 EE. (Amphiemys.)
Tertiary?; Georgia.

Agomphus petrosus Cope.

Cope, E. D. 1868 K, p. 236. (Adocus.)
1869 B, p. 734. (Adocus.)
1869 M, pp. 125, 126. (Emys.)
1870 G, p. 295. (Adocus.)
1871 G, p. 46.
1873 E, p. 625.
1875 E, p. 262.
Cretaceous (Green-sand No. 5); New Jersey.

Agomphus turgidus Cope.

Cope, E. D. 1869 M, pp. 125, 127. (Emys.)
1871 G, p. 46.
1875 E, p. 262.
Cretaceous (Green-sand No. 5); New Jersey.

BASILEMYS gen. nov. Type *Compsemys variolosus* Cope.

Basilemys imbricarius (Cope).

Cope, E. D. 1876 H, p. 257. (Compsemys.)
1877 G, p. 573. (Compsemys.)
Cretaceous (Laramie); Montana.

Basilemys variolosus (Cope).

Cope, E. D. 1876 H, p. 257. (Compsemys.)
Cope, E. D. 1875 E, pp. 91, 261. (C. ogmius.)
1875 I. (C. ogmius.)
1875 W, p. 336. (C. ogmius.)
1877 G, p. 573. (C. variolosus.)
Cretaceous (Laramie); Saskatchewan, Montana.

ZYGORAMMA Cope. Type *Z. striatula* Cope.

Cope, E. D. 1870 N, p. 550.
1871 G, p. 44.
Zittel, K. A. 1890 A, p. 536.

Zygoramma microglypha Cope.

Cope, E. D. 1871 G, p. 44.
1875 E, p. 263.
Cretaceous (Green-sand No. 5); New Jersey.

Zygoramma striatula Cope.

Cope, E. D. 1870 N, p. 550.
1871 G, p. 44.
1875 E, p. 263.
Cretaceous (Green-sand No. 5); New Jersey.

BAPTEMYS Leidy. Type *B. wyomingensis* Leidy.

Leidy, J. 1870 E, p. 5.
Baur, G. 1891 B, p. 429.
Cope, E. D. 1869 M (1870), pp. 233 and ii.
1871 Q, p. 563.
Leidy, J. 1871 C, p. 367.
Lydekker, R. 1889 G, pp. 129, 143.
Nicholson and Lydekker 1889 A, p. 1106.
Zittel, K. A. 1890 A, p. 536.

Baptemys costilatus (Cope).

Cope, E. D. 1875 C, p. 36. (Dermatemys?.)
1875 F, p. 96. (Dermatemys.)
1875 U, p. 1016. (Dermatemys.)
1877 K, p. 52, pl. xxiv, figs. 17–31. (Dermatemys.)
1884 O, p. 142. (Dermatemys.)
King, C. 1878 A, p. 377. (Dermatemys.)
Eocene (Wasatch); N. Mexico.

Baptemys wyomingensis Leidy.

Leidy, J. 1870 E, p. 5.
Baur, G. 1891 B, p. 429.
Cope, E. D. 1869 M (1870), p. 233 (Adocus vyomingensis); p. ii (Baptemys).
1870 G, p. 297. (Adocus vyomingensis.)
1873 E, p. 624. (Dermatemys.)
1882 J, p. 991, fig. 9. (Dermatemys.)
1884 O, p. 142. (Dermatemys vyomingensis.)
King, C. 1878 A, p. 404.
Leidy, J. 1871 C, p. 367.
1872 B, p. 367.
1873 B, pp. 157, 340, pl. xii, pl. xv, fig. 6.
Eocene (Bridger); Wyoming.

Baptemys sp. indet.

Cope, E. D. 1881 D, p. 184. (Dermatemys.)
Eocene (Wind River); Wyoming.

HOMOROPHUS Cope. Type *H. insuetus* Cope.

Cope, E. D. 1870 N, p. 551.
1882 E, p. 145. (Homorhophus.)
1884 O, p. 113. (Homorhophus.)
Nicholson and Lydekker 1889 A, p. 1106.
Zittel, K. A. 1890 A, p. 536.

Homorophus insuetus Cope.

Cope, E. D. 1870 N, p. 552.
1871 G, p. 44.
1875 E, p. 263.
Cretaceous (Green-sand No. 5); New Jersey.

CHELYDRIDÆ.

Swainson, 1839, Nat. Hist. and Classif. Fishes, etc., p. 116. (Chelidridæ.)
Agassiz, L. 1857 B, pp. 341, 409. (Chelydroidæ.)
Baur, G. 1889 A, p. 186.
1889 H.
1891 B, p. 428.
1891 C, p. 346.
Bienz, A. 1895 A.
Boulenger, G. A. 1889 A, p. 19.
Cope, E. D. 1871 C, p. 130. (Chelydrinæ.)
1872 B. (Chelydrinæ.)
1872 D.
1882 E, p. 143.
1884 O, pp. 111, 112.
Dollo, L. 1888 A.
Günther, A. 1888 A, p. 457.
Hay, O. P. 1896 A.
Lydekker, R. 1889 G, p. 133.
Maack, G. A. 1869 A, p. 230.
Meyer, H. 1852 B.
1856 A.
Nicholson and Lydekker 1889 A, p. 1104.
Rütimeyer, L. 1874 A, p. 16.
Siebenrock, F. 1897 A.
Steinmann and Döderlein 1890 A, p. 635.
Zittel, K. A. 1890 A, p. 532.

CHELYDRA Schweigger. Type *Testudo serpentina* Linn.

Schweigger, 1814, Prod., p. 23.
Agassiz, L. 1857 B, p. 416.
Baur, G. 1886 G, p. 740.
1889 B, p. 41.
1889 D.
1891 H, p. 58.
1892 D, p. 207.
Bienz, A. 1895 A.
Boulenger, G. A. 1889 A, p. 20.
Cope, E. D. 1869 M, p. 131.
1872 D.
1884 O, p. 112.
1888 CC, p. 305.
Dollo, L. 1888 A.
Gray, J. E. 1869 B, p. 180.
Hay, O. P. 1896 A.
1898 F, p. 937.
Hoffmann, C. K. 1890 A.
Lang and Rütimeyer, 1867 A.
Lydekker, R. 1889 G, p. 134.
Meyer, H. 1845 A, p. 12.
1852 B.
1856 A.
1865 C.
Nicholson and Lydekker 1889 A, p. 1104.
Pictet, F. J. 1853 A, p. 453.
Rütimeyer, L. 1874 A, p. 17.
Siebenrock, F. 1898 A, p. 425.
Strauch, A. 1890 A, p. 22.
Wieland, G. R. 1900 B, p. 416, fig. 5.
Winckler, T. C. 1869 A, p. 81.
Zittel, K. A. 1890 A, p. 535.

Chelydra crassa Cope.

Cope, E. D. 1888 CC, p. 306.
1882 C, p. 461. (Dermatemys sp.; no description.)
1888 C. (No description.)
Eocene (Puerco); New Mexico.

Chelydra serpentina (Linn.).

Linnæus, C., 1858, Syst. Nat., ed. x, p. 199.
Agassiz, L. 1857, p. 417, pl.
Boulenger, G. A. 1889 A, p. 20, figs. 3, 4.
Cope, E. D. 1869 M, p. 124.
Recent: Pleistocene; Maryland.

ACHERONTEMYS Hay. Type *A. heckmani* Hay.

Hay, O. P. 1899 D, p. 23.

Acherontemys heckmani Hay.

Hay, O. P. 1899 D, p. 23, pl. vi.
Miocene (Roslyn sandstone); Washington.

ANOSTEIRIDÆ.

Baur, G, 1889 H. (Staurotypidæ or Cinosternidæ, in part.)
1889 I, p. 276. (Pseudotrionychidæ.)
Günther, A. 1888 A, p. 457. (Pseudotrionychidæ, in part.)
Lydekker, R. 1889 G, p. 143. (Anosteirinæ.)

ANOSTEIRA Leidy. Type *A. ornata* Leidy.

Leidy, J. 1871 E, p. 102.
Baur, G. 1889 H, p. 58.
1889 I, p. 273.
Cope, E. D. 1873 E, pp. 620, 649. (Anostira.)
1873 M, p. 278. (Anostira.)
1882 E, p. 145. (Anostira.)
1882 J, p. 990. (Anostira.)
1884 O, pp. 112, 127. (Anostira.)
Dollo, L. 1886 A, p. 95. (Anostira.)
Günther, A. 1888 A, p. 457. (Anostira.)
Leidy, J. 1872 B, p. 270.
1873 B, p. 174.
Lydekker, R. 1889 G, p. 143.
Nicholson and Lydekker 1889 A, p. 1105.
Zittel, K. A. 1890 A, p. 534.

Anosteira ornata Leidy.

Leidy, J. 1871 E, p. 102.
Cope, E. D. 1873 E, p. 621.
1882 J, p. 989, fig. 7.
1884 O, p. 128.
Dollo, L. 1886 A, pl. ii, figs. 7, 8.
King, C. 1878 A, p. 404.
Leidy, J. 1872 B, p. 370.
1873 B, pp. 174, 341, pl. xvi, figs. 1-6.
Eocene (Bridger); Wyoming.

Anosteira radulina Cope.

Cope, E. D. 1872 V, p. 555.
Baur, G. 1889 I, p. 273. (A. radulata.)
Cope, E. D. 1873 E, p. 620.
1884 O, p. 128, pl. xviii, figs. 18, 19.
Eocene (Bridger); Wyoming.

EMYDIDÆ.

Gray, J. E. 1825, Ann. Philos. (2), x.
Agassiz, L. 1857 B, pp. 351, 430. (Emydoidæ.)
Baur, G. 1891 A, p. 348.
1892 A, p. 159.
1893 B, p. 675.
Boulenger, G. A. 1889 A, p. 48. (<Testudinidæ.)
Cope, E. D. 1872 D.
1882 E, pp. 143, 145. (Emydidæ, Cistudinidæ.)
1884 O, pp. 111, 113. (Emydidæ, Cistudinidæ.)
1899 A, p. 196. (Terrapenidæ.)
Dollo, L. 1886 A. (Emydidæ, Cistudinidæ.)
Gray, J. E. 1869 B, p. 175. (>Cistudinidæ.)
Günther, A. 1888 A, p. 457. (<Testudinidæ.)
Lydekker, R. 1889 G, p. 71. (<Testudinidæ.)
Mehnert, E. 1890 A.
Nicholson and Lydekker 1889 A, p. 1107. (<Testudinidæ.)
Pictet, F. J. 1853 A, p. 446. (Emydides.)
Rosenberg, E. 1891 A.
Rütimeyer, L. 1874 A, pp. 18, 53, 82.
Steinmann and Döderlein 1890 A, p. 637.
Vaillant, L. 1891 A.
Zittel, K. A. 1890 A, p. 637.

EMYS Duméril. Type *Testudo orbicularis* Linn.

Duméril, 1806, Zool. Anal., p. 76.
Agassiz, L. 1857 B, p. 441.
Baur, G. 1892 A, p. 158.
1892 C, p. 44 (Terrapene); p. 245 (Emydes).
1892 D, p. 208.
Boulenger, G. A. 1889 A, p. 111.
Cope, E. D. 1872 M, p. 463. (Palæotheca, type *P. polycypha.*)
1872 O, p. 474. (Notomorpha, type *N. gravis.*)
1873 E, p. 625.
1877 K, p. 53.
1882 J, p. 992.
1884 O, pp. 113, 129 (Emys); p. 142 (Notomorpha).
Hoffmann, C. K. 1890 A.
Leidy, J. 1871 C, p. 366.
Lydekker, R. 1889 G, p. 102.
Mehnert, E. 1890 A.
Owen, R. 1842 A, p. 160.
1849 B.
Pictet, F. J. 1853 A, p. 447.
Pictet and Humbert 1856 A.
Pictet and Jaccard 1860 A, p. 15.
Rosenberg, E. 1891 A.
Strauch, A. 1890 A, p. 14.
Vaillant, L. 1891 A.
Winckler, T. C. 1869 A.
Zittel, K. A. 1890 A, p. 538.

It is not probable that any of the species here included under *Emys* really belongs to the genus as it is restricted by modern writers. The species are more closely related to *Chrysemys* and *Clemmys.*

Emys cibollensis Cope.

Cope, E. D. 1877 K, p. 57, pl. xxvii, fig. 4; pl. xxviii, figs. 3-6.
1875 C, p. 36. (E. stevensoniana.)
1875 F, p. 96. (E. stevensonianus.)
1884 O, p. 131. (Syn.? of E. euthneta.)
Eocene (Wasatch); New Mexico.

Emys euglypha Leidy.

Leidy, J. 1889 B, p. 97.
1889 E, p. 27, pl. iv, fig. 1.
1892 A.
Pliocene (Peace Creek beds); Florida.

Emys euthneta Cope.

Cope, E. D. 1873 E, p. 628.
1884 O, pp. 129, 133, pl. xviii, figs. 34-42.
King, C. 1878 A, p. 376.
Eocene (Wasatch); Wyoming.

Emys haydeni Leidy.

Leidy, J. 1870 S, p. 123.
Cope, E. D. 1884 O, pp. 130, 137.
Leidy, J. 1871 C, p. 366.
1872 B, p. 367. (E. wyomingensis, in part.)
1873 B, pp. 145, 340, pl. ix, fig. 6. (E. wyomingensis, in part.)
Eocene (Bridger); Wyoming.

Emys latilabiata Cope.

Cope, E. D. 1872 E, p. 471.
1873 E, pp. 625, 626.
1884 O, pp. 130, 138.
Eocene (Bridger); Wyoming.

Emys lativertebralis Cope.

Cope, E. D. 1877 K, p. 53, pl. xxvii, figs. 1-3; pl. xxviii, figs. 1, 2.
1875 C, p. 36. (E. latilabiatus.)
1875 F, p. 96. (E. latilabiatus.)
1882 J, p. 991, fig. 10.
1884 O, p. 129.
Eocene (Wasatch); New Mexico.

Emys megaulax Cope.

Cope, E. D. 1873 E, p. 628.
1873 E, p. 629. (E. pachylomus.)
1884 O, p. 132, pl. xviii, figs. 26-33.
King, C. 1878 A, p. 376. (E. megaulax, E. pachylomus.)
Eocene (Wasatch); Wyoming.

Emys petrolei Leidy.

Leidy, J. 1868 A, p. 176.
Cope, E. D. 1869 M, p. 128.
Leidy, J. 1873 B, pp. 260, 340, pl. ix, fig. 7.
Quaternary; Texas.

Emys polycypha Cope.

Cope, E. D. 1872 M, p. 463. (Palæotheca.)
1873 E, pp. 625, 630.
1884 O, pp. 129, 131, pl. xviii, figs. 20-22.
Eocene (Bridger); Wyoming.

Emys septaria Cope.

Cope, E. D. 1873 E, p. 625.
Cope, E. D. 1882 J, p. 992.
1884 O, pp. 130, 139, pl. xvii, figs. 9-13.
Leidy, J. 1870 E, p. 50. (E. stevensonianus, in part.)
1871 B, p. 372. (E. stevensonianus, in part.)
1871 C, p. 366. (E. stevensonianus, in part.)
1873 B, pp. 140, 340, pl. ix, figs. 2, 3. (E. vyomingensis, in part.)
Eocene (Bridger); Wyoming.

Emys shaughnessiana Cope.

Cope, E. D. 1884 O, pp. 130, 135, pl. xxiii, figs. 3-8.
1882 J, p. 992. (Not adequately defined.)
Eocene (Bridger); Wyoming.

Emys terrestris Cope.

Cope, E. D. 1872 M, p. 463. (Palæotheca.)
1873 E, p. 629.
1884 O, pp. 129, 130, 131, pl. xviii, figs. 23-25.
Eocene (Bridger); Wyoming.

Emys testudinea Cope.

Cope, E. D. 1872 O, p. 475. (Notomorpha.)
1873 E, p. 627.
1877 K, p. 58.
1884 O, pp. 129, 134, pl. xxiii, figs. 12, 13.
Eocene (Green River); Wyoming.

Emys wyomingensis Leidy.

Leidy, J. 1869 B, p. 66.
Cope, E. D. 1873 E, pp. 625, 626.
1877 K, p. 53. (E. vyomingensis.)
1884 O, p. 135, pl. xxiii, figs. 9-11. (E. vyomingensis.)
Leidy J. 1870 E, p. 5. (E. stevensonianus, in part.)
1870 S, p. 123. (E. jeanesi.)
1871 B, p. 372. (E. jeanesianus; E. stevensonianus, in part.)
1871 C, p. 366. (E. stevensoni, in part; E. jeanesi.)
1872 B, p. 367.
1873 B, pp. 140, 340, in part; pl. ix, figs. 4, 5; pl. x, figs. 1, 2.
Osborn, Scott, and Speir 1878 A, p. 95.
Eocene (Bridger); Wyoming.

NOTOMORPHA Cope. Type *N. gravis* Cope.

Cope, E. D. 1872 O, p. 474.
1884 O, p. 142.
Günther, A. 1888 A, p. 457.

Notomorpha gravis Cope.

Cope, E. D. 1872 O, p. 476.
Cope, E. D. 1872 O, p. 477. (N. garmanii.)
1873 E, pp. 625, 626. (Emys.)
1884 O, p. 143, pl. xxiii, figs. 14-16.
Eocene (Wasatch); Wyoming.

EUPACHEMYS Leidy. Type *E. obtusa* Leidy.

Leidy, J. 1877 A, p. 232.

Eupachemys obtusa Leidy.

Leidy, J. 1877 A, p. 232, pl. xxxiv, figs. 4, 5.
Leidy, J. 1889 E, p. 29. ("E. rugosus".)
This species may be identical with *Testudo crassiscutata*.
Phosphate beds; South Carolina.

HYBEMYS Leidy. Type *H. arenarius* Leidy.

Leidy, J. 1871 E, p. 103.
1873 B, p. 174.

Hybemys arenarius Leidy.

Leidy, J. 1871 E, p. 103.
King, C. 1878 A, p. 404.
Leidy, J. 1872 B, p. 369.
1873 B, pp. 174, 340, pl. xv, fig. 9.
Eocene (Bridger); Wyoming.

TRACHEMYS Agassiz. Type *T. scabra*=*Testudo scripta* Schoepff.

Agassiz, L. 1857 B, p. 434.
Baur, G. 1892 D, p. 208.
Cope, E. D. 1878 C, p. 228. (Pseudemys.)
1878 H, p. 395. (Pseudemys.)

Trachemys bisornata (Cope).

Cope, E. D. 1878 C, p. 228. (Pseudemys.)
Pliocene; Texas.

Trachemys hilli (Cope).

Cope, E. D. 1878 H, p. 395. (Pseudemys.)
Miocene (Loup Fork); Kansas.

CLEMMYS Ritgen. Type *Testudo punctata* Schoepff=*T. guttata* Schneider.

Ritgen, F. A., 1828, Nova Acta Acad. Leop.-Car., xiv, i, p. 272.
Agassiz, L. 1857 B, p. 442 (Nanemys); p. 443 (Calemys, Glyptemys); p. 444 (Actemys).
Baur, G. 1892 C, p. 44.
Boulenger, G. A. 1889 A, p. 100.
Goette, A. 1899 A.
For additional synonymy and literature of this genus see Boulenger, as cited.

Clemmys insculpta Le C.

Le Conte, J., 1830, Ann. Lyc. New York, iii, p. 112. (Testudo.)
Cope, E. D. 1899 A, p. 194.
Boulenger, G. A. 1889 A, p. 107.
Recent; Eastern U. S.: Pleistocene. (Port Kennedy); Pennsylvania.

Clemmys percrassa Cope.

Cope, E. D. 1899 A, p. 194, pl. xviii, figs. 1-1*g*.
Pleistocene (Port Kennedy); Pennsylvania.

TERRAPENE[1] Merrem. Type *Testudo carolina* Linn.

Merrem, B. 1820, Tent. Syst. Amphib., p. 27.
Agassiz, L. 1857 B, p. 444. (Cistudo.)
Baur, G. 1892 A, p. 158. (Cistudo.)
1892 C, p. 44 (Cistudo); p. 245 (Terrapene).
Boulenger, G. A. 1889 A, p. 114. (Cistudo.)
Cope, E. D. 1895 H, p. 757. (Terrapene; Toxaspis, type *T. major*.)
1899 A, p. 196. (Toxaspis.)
Fleming, 1822, Phil. Zool., ii, p. 270. (Cistuda.)
Pictet and Humbert 1856 A, p. 35. (Cistudo.)
Zittel, K. A. 1890 A, p. 537. (Cistudo.)

Terrapene anguillulata (Cope).

Cope, E. D. 1899 A, p. 196, pl. xix, fig. 1. (Toxaspis.)
Pleistocene (Port Kennedy); Pennsylvania.

Terrapene eurypygia (Cope).

Cope, E. D. 1869 M, p. 124. (Cistudo.)
Pleistocene; Maryland.

Terrapene marnochii (Cope).

Cope, E. D. 1878 C, p. 229. (Cistudo.)
1885 S. (Cistudo.)
1889 F. (Cistudo.)
Pleistocene (Equus beds); Texas.

TESTUDINIDÆ.

Gray, J. E., 1825, Ann. Phil. (2), x.
Agassiz, L. 1857 B, pp. 356, 446. (Testudinina.)
Baur, G. 1889 H.
1889 J.
1892 A, p. 159.
1893 B, p. 677.
Boulenger, G. A. 1889 A, p. 48. (In part.)
Burckhardt, K. 1895 A.
Cope, E. D. 1882 E, p. 148.
1884 O, pp. 111, 113.
Dollo, L. 1887 A.
Duméril and Bibron, 1834, Erp. Gén., i, p. 352; ii, pp. 1-170. (Chersites.)
Gray, J. E. 1869 B, p. 166.
1873 C, p. 722. (Testudinata.)
Günther, A. 1888 A, p. 457.
Lydekker, R. 1889 G, p. 71. (In part.)
Nicholson and Lydekker 1889 A, p. 1107. (In part.)
Siebenrock, F. 1897 A.
Stannius, H. 1856 A. (Testudinea.)
Steinmann and Döderlein 1890 A, p. 638.
Wieland, G. R. 1900 B, p. 413.
Zittel, K. A. 1890 A, p. 539. (Chersidæ.)

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[1] *Terrapene clausa* has been reported by Dr. Leidy (1889 H, p. 6) from a cave in Pennsylvania. The species accompanying the remains, with few exceptions, yet live in the vicinity.

HADRIANUS Cope. Type *H. octonarius* Cope.

Cope, E. D. 1872 N, p. 468.
Baur, G. 1896 B, p. 568.
Cope, E. D. 1873 E, p. 630.
  1877 K, p. 58.
  1882 E, p. 146.
  1882 J, p. 992.
  1884 O, pp. 113, 140.
Hay, O. P. 1899 D, p. 22.
Leidy, J. 1873 B, p. 137.
Lydekker, R. 1889 G, p. 72.
Zittel, K. A. 1890 A, p. 540. (Syn. of Testudo.)

Hadrianus allabiatus Cope.

Cope, E. D. 1872 E, p. 471.
  1873 E, p. 630.
  1884 O, p. 140, pl. xv, figs. 13-15.
Osborn, Scott, and Speir 1878 A, p. 94.
  Eocene (Bridger); Wyoming.

Hadrianus corsoni (Leidy).

Leidy, J. 1871 H. (Testudo.)
Cope, E. D. 1872 M, p. 463. (Testudo hadrianus.)
  1872 N, p. 468. (Hadrianus quadratus.)
  1873 E, p. 631.
  1875 C, p. 36.
  1875 F, p. 96.
  1877 K, p. 58, pl. xxiv, fig. 36.
Cope, E. D. 1882 J, p. 992.
  1884 O, p. 141.
Leidy, J. 1871 B, p. 372. (Emys carteri.)
  1871 K, p. 228. (E. carteri.)
  1872 B, p. 366 (Testudo); p. 367 (E. carteri).
  1872 I, p. 268. (Testudo.)
  1873 B, pp. 132, 339, pl. xi, figs. 1, 2; pl. xv, fig. 7; pl. xxix, figs. 2-4; pl. xxx, figs. 1-4. (Testudo; on pl. xv, Emys carteri.)
Maack, G. A. 1869 A, p. 278. (Emys carteri.)
  Eocene (Bridger); Wyoming: (Wasatch); New Mexico.

Hadrianus octonarius Cope.

Cope, E. D. 1872 N, p. 468.
  1873 E, p. 630
  1882 J, p. 992, figs. 11-13.
  1884 O, p. 140, pl. xx.
Hay, O. P. 1899 D, p. 23.
Osborn, Scott, and Speir 1878 A, p. 95.
  Eocene (Bridger); Wyoming.

Hadrianus schucherti Hay.

Hay, O. P. 1899 D, p. 22, pls. iv, v.
Schuchert, C. 1900 A, p. 328.
  Eocene (Jackson); Alabama.

STYLEMYS Leidy. Type *S. nebrascensis* Leidy.

Leidy, J. 1851 B, p. 172.
Agassiz, L. 1857 B, p. 448. (No name.)
Cope, E. D. 1869 M, p. 123.
  1875 F, p. 74.
  1882 E, p. 145.
  1884 O, pp. 113, 769.
Leidy, J. 1871 C, p. 366.
  1873 B, p. 223.
Lydekker, R. 1889 G, p. 93.
Nicholson and Lydekker 1889 A, p. 1109.
Zittel, K. A. 1890 A, p. 540. (Syn. of Testudo.)

Stylemys nebrascensis Leidy.

Leidy, J. 1851 B, p. 172.
Cope, E. D. 1869 M, p. 124, pl. vii, figs. 10-12. (S. culbertsonii, S. nebrascensis.)
  1874 B, p. 511.
  1884 O, p. 769.
  1891 A, p. 5.
Haberlandt, G. 1876 A. (Testudo culbertsoni.)
Hayden, F. V. 1858 B, p. 158. (Testudo.)
Leidy, J. 1851 C, p. 173. (Emys hemispherica, Testudo lata.)
  1851 G, p. 327. (E. oweni.)
  1852 D, p. 34. (E. culbertsonii.)
  1852 E, p. 59. (T. hemispherica, T. nebrascensis, T. oweni, T. culbertsonii.)
  1852 J, p. 567, pl. xii A, figs. 1, 2 (T. nebrascensis); p. 568, pl. xii A, figs. 3, 4 (T. oweni); p. 569, pl. xii (T. culbertsonii); p. 570, pl. xii B, figs. 1, 2 (T. hemispherica); p. 572 (T. lata).
Leidy, J. 1852 L, p. 65. (T. lata, E. hemispherica, E. nebrascensis.)
  1854 A, pp. 103, 115, pl. xxi (T. nebrascensis); pp. 105, 115, pl. xx; pl. xxiv, fig. 3 (T. hemispherica); pp. 106, 115, pl. xxi, pl. xxiv, fig. 4 (T. oweni); pp. 108, 115, pl. xxii, pl. xxiv, fig. 2 (T. culbertsonii); pp. 110, 115, pl. xxiii, pl. xxiv, fig. 1 (T. lata).
  1869 A, p. 26. (Testudo, or Stylemys.)
  1871 C, p. 366.
  1873 B, pp. 224, 339, pl. xix, figs. 7, 9, 10. (Testudo.)
Lydekker, R. 1889 G, p. 94.
Maack, G. A. 1869 A, 245 (T. nebrascensis, hemispherica, oweni); p. 246 (T. lata, culbertsonii).
Marsh, O. C. 1870 D. (Testudo.)
Winckler, T. C. 1869 A, p. 145, pls. xxxi-xxxiii. (T. nebrascensis, culbertsoni, lata, oweni.)
Zittel, K. A. 1890 A, p. 540, fig. 501. (Testudo.)
  Oligocene (White River); South Dakota, Colorado.

Stylemys niobrarensis Leidy.

Leidy, J. 1858 E, p. 29. [Testudo (Stylemys.)]
Cope, E. D. 1869 M, p. 124.
  1874 B, p. 531.
Hayden, F. V. 1858 B, p. 158. (Testudo.)
Leidy, J. 1869 A, p. 26. (Testudo, or Stylemys.)
  1871 C, p. 366.
  1873 B, pp. 225, 340, pl. iii, figs. 4-6; pl. xix, figs. 6-8. (Testudo.)

Maack, G A. 1869 A. p. 222. (Testudo.)
Miocene; South Dakota.

Stylemys oregonensis Leidy.

Leidy, J. 1871 M, p. 248.
Cope, E. D. 1879 B, p. 55.
1884 O, p. 770. (Syn. of S. nebrascensis.)
Leidy, J. 1873 B, pp. 226, 340, pl. xv, fig. 10. (Testudo.)
Miocene (John Day); Oregon.

TESTUDO Linn. Type *T. græca* Linn.

Linnæus, C., Syst. Nat., ed. x, 1858, p. 197. (In part.)
Agassiz, L. 1857 B, p. 446. (Testudo, Xerobates.)
Baur, G. 1889 J.
1892 A.
Bienz, A. 1895 A, p. 99.
Boulenger, G. A. 1889 A, p. 149.
Cope, E. D. 1874 B, p. 511.
1878 H, p. 393. (Testudo, Xerobates.)
1882 E, p. 146.
1884 O, pp. 113, 762. (Testudo, Xerobates.)
1886 N. (Caryoderma, type *C. snovianum.*)
1889 P, p. 662. (Caryoderma.)
Flower and Lydekker 1891 A, p. 204. (Caryoderma.)
Fürbringer, M. 1900 A, p. 320.
Gray, J. E. 1869 B, p. 167.
1873 C, p. 723. (Xerobates.)
Günther, A. 1877 A.
Hoffmann, C. K. 1890 A.
Leidy, J. 1852 J, p. 566.
1854 A, pp. 101; 115.
Lydekker, R. 1889 G, p. 71.
Pictet, F. J. 1853 A, p. 443.
Pictet and Humbert 1856 A, p. 17.
Siebenrock, F, 1897 A.
1898 A.
Strauch, A. 1890 A, p. 11.
Wieland, G. R. 1900 B, p. 415, figs. 1-4.
Zittel, K. A. 1890 A, p. 540. (Testudo.)
1893 B, p. 147. (Caryoderma.)

Testudo amphithorax Cope.

Cope, E. D. 1873 S. p. 6.
1873 C C, p. 19.
1874 B, p. 511.
1884 O, pp. 762, 767, pl. lxi, fig. 4.
Oligocene (White River); Colorado.

Testudo brontops Marsh.

Marsh, O. C. 1890 E, p. 179, pl. viii.
Dana, J. D. 1896 A, p. 901, fig. 1516.
Marsh, O. C. 1897 C, pp. 523, 527, figs. 95, 96.
Oligocene (White River); South Dakota, Colorado.

Testudo crassiscutata Leidy.

Leidy, J. 1889 E, p. 31, pl. vi, figs. 4-7.
1892 A.
Pliocene; Florida.
This species may be identical with *Eupachemys obtusa.*

Testudo cultrata Cope.

Cope, E. D. 1873 S, p. 6.
1873 C C, p. 19.
1874 B, p. 511.
1884 O, pp. 762, 763, pl. lxiii, figs. 1-3.
1892 E, p. 256.
Oligocene (White River); Colorado.

Testudo cyclopygia (Cope).

Cope, E. D. 1878 H, p. 394. (Xerobates.)
Hay, O. P. 1899 G, p. 349.
Miocene (Loup Fork); Kansas.

Testudo gilbertii Hay.

Hay, O. P. 1899 G, p. 349.
Gilbert, J. Z. 1898 A, p. 143, figs. 1-4. (Xerobates undata.)
Miocene (Loup Fork); Kansas.

Testudo hexagonata Cope.

Cope, E. D. 1893 A, p. 77, pl. xxii, fig. 2.
Pleistocene (Equus beds); Texas.

Testudo klettiana Cope.

Cope, E. D. 1875 F, p. 75.
1877 K, p. 285, pl. lxvii, fig. 3.
Miocene (Loup Fork); New Mexico.

Testudo laticaudata Cope.

Cope, E. D. 1893 A, p. 75, pl. xxii, fig. 1.
Pleistocene (Equus beds); Texas.

Testudo laticunea Cope.

Cope, E. D. 1873 S, p. 6.
1873 CC, p. 19.
1874 B, p. 511.
1884 O, pp. 762, 765, pl. lxi, fig. 1.
Oligocene (White River); Colorado.

Testudo ligonia Cope.

Cope, E. D. 1873 S, p. 6.
1873 CC, p. 19.
1874 B, p. 511.
1884 O, pp. 762, 766, pl, lxi, figs. 2, 3.
Oligocene (White River); Colorado.

Testudo orthopygia (Cope).

Cope, E. D. 1878 H, p. 393. (Xerobates.)
Hay, O. P. 1899 G, p. 349.
Miocene (Loup Fork); Kansas.

Testudo pertenuis Cope.

Cope, E. D. 1892 G, p. 226.
1893 A, pp. 47, 49, fig. 1.
Pliocene (Blanco); Texas.

Testudo quadrata.

Cope, E. D. 1884 O, pp. 762, 764, pl. lxi, fig. 5.
Oligocene (White River); Colorado.

Testudo snoviana (Cope).

Cope, E. D. 1886 N. (Caryoderma.)
1889 P, p. 662, pl. xxxii. (Caryoderma.)
Trouessart, E. L. 1898 A, p. 1136. (Caryoderma.)
Williston, S. W. 1898 G, p. 132. (Testudo undata?)
Miocene (Loup Fork; Kansas.

Testudo turgida Cope.

Cope, E. D. 1892 J, p. 127.
1892 E, p. 255.
1892 P.
1893 A, p. 47.
Pliocene (Blanco); Texas.

Testudo undata Cope.

Cope, E. D. 1875 F, p. 74.
Cope, E. D. 1877 K, p. 283, pl. lxvii, figs. 1, 2.
Hay, O. P. 1899 G, p. 349.
Miocene (Loup Fork); New Mexico.

Testudo sp. indet.

Leidy, J. 1860 B, p. 122, pl. xxviii, figs. 1–4.
Pleistocene; South Carolina.

Suborder TRIONYCHIA.

Unless otherwise indicated, the following authors refer to this group under the name *Trionychoidea*.

Baur, G. 1888 B, p. 786.
1889 C, p. 240. (Chilotæ.)
1890 D, p. 536. (Trionychia, Chilotæ.)
1891 B, pp. 418, 420. (Trionychia.)
Boulenger, G. A. 1889 A, pp. 5, 237.
Cope, E. D. 1891 N, p. 39.
1898 B, p. 62.
Duméril and Bibron, 1834, Érp. Gén., i, p. 353; ii, p. 461. (Potamites.)
Gadow, H. 1898 A, p. 91. (Trionychoidea.)
Gray, J. E. 1872 A.
Günther, A. 1888 A, p. 457.
Haeckel, E. 1895 A, p. 326. (Diacostalia.)
Lydekker, R. 1889 G, p. 3.
Nicholson and Lydekker 1889 A, p. 1116.
Pictet, F. J. 1853 A, p. 455. (Trionychides.)
Rütimeyer, L. 1874 A, pp. 13, 51.
Seeley, H. G. 1880 B, p. 412. (Peltochelyidæ.)
Siebenrock, F. 1897 A. (Trionychoidæ.)
Stannius, H. 1856 A. (Trionychoidea.)
Steinmann and Döderlein 1890 A, p. 634.
Vaillant, L. 1894 A. (Mecraspedota.)
Zittel, K. A. 1890 A, p. 513. (Trionychia.)

PLASTOMENIDÆ nom. nov.

Trionychia without fontanelles in the plastron behind the anterior border of the hyoplastron.

PLASTOMENUS Cope. Type *P. thomasii* Cope.

Cope, E. D. 1873 M.
1873 E, p. 617.
1875 C, p. 35.
1875 E, p. 92.
1875 I.
1875 W, p. 336.
1877 K, p. 47.
1882 E, p. 144.
1884 O, pp. 112, 122.
Dollo, L. 1886 A, p. 94.
Lydekker, R. 1889 G, p. 7. (Syn. of Trionyx.)
Nicholson and Lydekker 1889 A, p. 1118.
Zittel, K. A. 1890 A, p. 517.

Plastomenus communis Cope.

Cope, E. D. 1875 C, p. 35.
1875 F, p. 96.
1877 K, pp. 48, 50, pl. xxv, figs. 1–6. (Except "var. ii," p. 50, which belongs to P. molopinus.)
1882 C, p. 461.
1884 O, pp. 123, 126.
1888 C C, p. 301. (P. communis?)
King C. 1878 A, p. 377.
Eocene (Puerco? and Wasatch); New Mexico.

Plastomenus corrugatus Cope.

Cope, E. D. 1875 C, p. 35.
1875 F, p. 96.
1875 W, p. 337.
1877 K, p. 48, pl. xxv, figs. 20–26.
1884 O, p. 123.
King, C. 1878 A, p. 377.
Eocene (Wasatch); New Mexico.

Plastomenus costatus Cope.

Cope, E. D. 1875 E, pp. 94, 261, pl. viii, fig. 8.
1875 I.
1875 W, p. 337.
Cretaceous (Laramie); Saskatchewan.

Plastomenus fractus Cope.

Cope, E. D. 1875 C, p. 35.
1875 F, p. 96.
1877 K, p. 49, pl. xxv, figs. 12–19.
1884 O, p. 123.
Eocene (Wasatch); New Mexico.

Plastomenus insignis Cope.

Cope, E. D. 1874 B, p. 454.
1874 C, p. 29.
1875 E, pp. 95, 261, pl. vi, fig. 10.
Cretaceous (Laramie); Colorado.

Plastomenus lachrymalis Cope.

Cope, E. D. 1874 O, p. 15.
1875 C, p. 35.
1875 F, p. 96.
1877 K, pp. 48, 51, pl. xxv, fig. 7.
1884 O, p. 123.
Eocene (Wasatch); New Mexico.

Plastomenus molopinus Cope.

Cope, E. D. 1872 M, p. 461. (Anostira.)
1873 E, p. 620.
1873 M, p. 279.
1877 K, p. 50, pl. xxv, figs. 5, 6. (Var. ii of P. communis.)
1884 O, pp. 123, 125, pl. xviii, figs. 9–14.

?Leidy, J. 1873 B, p. 180, pl. xvi, fig. 12. ("Trionyx.")
Eocene (Bridger); Wyoming: (Wasatch); New Mexico.

Plastomenus œdemius Cope.

Cope, E. D. 1872 M, p. 461. (Anostira.)
1873 E, p. 619.
1873 M.
1877 K, p. 48.
1884 O, pp. 123, 126, pl. xviii, figs. 15–17.
Eocene (Bridger); Wyoming.

Plastomenus punctulatus Cope.

Cope, E. D. 1874 B, p. 453.
1874 C, p. 29.
1875 E, pp. 94, 261, pl. vi, fig. 9.
1877 G, p. 573.
Cretaceous (Laramie); Colorado, South Dakota, Montana.

Plastomenus serialis Cope.

Cope, E. D. 1877 K, pp. 48, 51, pl. xxv, figs. 8–10.
1875 C, p. 35. (P. ? thomasii.)
Cope, E. D. 1884 O, p. 123.
Eocene (Wasatch); New Mexico.

Plastomenus thomasii Cope.

Cope, E. D. 1872 M, p. 462. (Trionyx.)
1873 E, p. 618 (P. thomasii); p. 619 (P. multifoveatus).
1873 M, p. 278 (P. thomasii); p. 279 (P. multifoveatus).
1875 C, p. 35. (P. catenatus.)
1875 F, p. 96. (P. catenatus, P. thomasii.)
1877 K, pp. 49, 51 (P. thomasii); p. 49, pl. xxv, fig. 11 (P. multifoveatus).
1884 O, pp. 123, 125 (P. thomasii); pp. 123, 124, pl. xviii, figs. 2–8 (P. multifoveatus).
Eocene (Bridger); Wyoming: (Wasatch); New Mexico.

Plastomenus trionychoides Cope.

Cope, E. D. 1872 M, p. 461. (Anostira.)
1873 E, p. 619.
1873 M, p. 279.
1884 O, p. 123, pl. xviii, fig. 1.
Eocene (Bridger); Wyoming.

TRIONYCHIDÆ.

Agassiz, L. 1857 B, pp. 329, 394.
Baur, G. 1887 B, p. 96.
1888 B, p. 736.
1889 C.
1889 H.
1889 I, p. 273.
1891 C, p. 351.
1893 A, p. 213.
Boulenger, G. A. 1889 A, p. 241.
Cope, E. D. 1869 M, p. 150.
1882 E, p. 143.
1882 J, p. 989.
1884 O, pp. 111, 112.
Cope, E. D. 1889 R, p. 865.
Dollo, L. 1884 A.
1886 A.
1888 A.
Gray, J. E. 1873 C, p. 38.
Günther, A. 1888 A, p. 457.
Hoffmann, C. K. 1890 A.
Lydekker, R. 1889 G, p. 4.
Negri, A. 1892 A.
Siebenrock, F. 1897 A.
1898 A.
Steinmann and Döderlein 1890 A, p. 634.
Strauch, A. 1890 A, p. 33. (Trionychida.)

TRIONYX Geoffroy. Type *Testudo punctata* Lacépède.

St. Hilaire, G. 1809 A, p. 1.
Baur, G. 1893 A, p. 214.
Boulenger, G. A. 1889 A, p. 242.
Cope, E. D. 1869 M, p. 151.
1873 E, p. 649.
1875 C, p. 34.
1877 K, p. 43.
1884 O, pp. 112, 117.
Fürbringer, M, 1900 A, p. 320.
Gray, J. E. 1869 B, p. 212.
1873 A.
Hoffmann, C. K. 1890 A.
Leidy, J. 1871 C, p. 367.
Lydekker, R. 1889 G, p. 7.
Maack, G. A. 1869 A.
Owen, R. 1842 A, p. 168.
1849 B.
1849 C.
Pictet, F. J. 1853 A, p. 456.
Pictet and Humbert 1856 A.
Seeley, H. G. 1880 B, p. 410.
Siebenrock, F. 1897 A.
1898 A.
Wagler, J., 1830, Nat. Syst. Amphib., p. 134.
Winckler, T. C. 1869 A.
Zittel, K. A. 1890 A, p. 515.

It is highly probable that none of the species here recorded under *Trionyx* really belongs under the genus as understood in recent works on living turtles, especially as the genus was restricted by Wagler in 1830. See Dr. Baur as above cited.

Trionyx buiei Cope.

Cope, E. D. 1869 M, pp. 151, 153.
1875 V, p. 34.
Miocene; North Carolina.

Trionyx cariosus Cope.

Cope, E. D. 1875 C, p. 35.
1875 F, p. 95.
1877 K, p. 44, pl. xxvi, figs. 5–10.
1884 O, p. 118.
Eocene (Wasatch); New Mexico.

Trionyx cellulosus Cope.

Cope, E. D. 1867 C, p. 142.
Miocene; Maryland.

Trionyx coalescens (Cope).

Cope, E. D. 1875 E, pp. 93, 261, pl. viii, figs. 6, 7. (Plastomenus.)
1875 I. (Plastomenus.)
Lambe, L. M. 1899 A, pp. 68, 70. (Plastomenus.)
Cretaceous (Laramie); Saskatchewan.

Trionyx concentricus Cope.

Cope, E. D. 1872 M, p. 461.
1873 E, p. 617.
1884 O, pp. 118, 120, pl. xvi, figs. 3-6.
Eocene (Bridger); Wyoming.

Trionyx foveatus Leidy.

Leidy, J. 1856 F, p. 73.
Baur, G. 1891 B, p. 418.
Cope, E. D. 1869 M, p. 152.
1874 C, p. 29.
1875 E, p. 260.
1877 G, p. 573.
Leidy, J. 1856 C, p. 120.
1856 Q, p. 312.
1860 A, p. 148, pl. xi, figs. 1-3.
Marsh, O. C. 1897 C, p. 527.
Cretaceous (Laramie); Montana, Colorado.

Trionyx guttatus Leidy.

Leidy, J. 1869 B, p. 66.
Cope, E. D. 1869 M, pp. 151, 152.
1873 E, p. 617.
1875 C, p. 35. (T. uintaensis.)
1875 F, p. 95. (T. uintaensis.)
1877 K, p. 46.
1884 O, p. 119.
King, C. 1878 A, p. 404.
Leidy, J. 1871 C, p. 367.
1872 B, p. 370.
1873 B, pp. 176, 342, pl. ix, fig. 1.
Eocene (Bridger); Wyoming: (Wasatch); New Mexico.

Trionyx halophilus Cope.

Cope, E. D. 1869 G, p. 12.
1869 B, p. 735.
1869 M, p. 151, pl. vii, fig. 15.
1875 E, p. 261.
Cretaceous (Green-sand No. 4); Delaware, New Jersey, Virginia.

Trionyx heteroglyptus Cope.

Cope, E. D. 1873 M.
1873 E, p. 616.
1884 O, pp. 118, 120, pl. xvi, fig. 2.
Eocene (Bridger); Wyoming.

Trionyx leptomitus Cope.

Cope, E. D. 1875 C, p. 35.
1875 F, p. 95.
1877 K, p. 44, pl. xxv, figs. 27-31; pl. xxvi, figs. 1-4.
1884 O, p. 118.
King, C. 1878 A, p. 377.
Eocene (Wasatch); New Mexico.

Trionyx leucopotamicus Cope.

Cope, E. D. 1891 A, p. 5, pl. i, figs. 8, 9.
Ami, H. M. 1891 A.
Oligocene (White River); N. W. Terr. of British America, North Dakota.

Trionyx lima Cope.

Cope, E. D. 1869 G, p. 12.
1869 K, p. 90.
1869 M, pp. 151, 153, pl. vii, fig. 14.
1875 H, p. 363.
Miocene; New Jersey.

Trionyx mammilaris Cope.

Cope, E. D. 1877 G, p. 573. (No description.)
Cretaceous (Laramie); Montana.

Trionyx pennatus Cope.

Cope, E. D. 1869 G, p. 12.
1869 B, p. 735.
1869 M, p. 152, pl. vii, fig. 13.
Eocene (Green-sand); New Jersey.

Trionyx priscus Leidy.

Leidy, J. 1851 H, p. 329.
Cope, E. D. 1869 B, p. 735.
1869 G, p. 12.
1869 M, pp. 151, 153.
1875 E, p. 260.
Leidy, J. 1865 A, pp. 113, 120, pl. xviii, fig. 9.
Maack, G. A. 1869 A, p. 281.
Cretaceous (Green-sand No. 4); New Jersey.

Trionyx punctiger Cope.

Cope, E. D. 1891 A, p. 5.
1883 F, p. 217 ("Trionyx sp. 2").
Oligocene (White River); South Dakota.

Trionyx radulus Cope.

Cope, E. D. 1875 C, p. 35.
1875 F, p. 95.
1877 K, p. 45, pl. xxvi, figs. 11-16.
1884 O, pp. 118, 119.
King, C. 1878 A, p. 377.
Eocene (Wasatch); New Mexico: (Bridger); Wyoming.

Trionyx scutumantiquum Cope.

Cope, E. D. 1873 E, p. 617.
1882 J, p. 988, fig. 6.
1884 O, pp. 118, 121, pl. xvi, figs. 1, 1*a*.
King, C. 1878 A, p. 376.
Eocene (Wasatch); Wyoming.

Trionyx uintaënsis Leidy.

Leidy, J. 1872 I, p. 267.
Cope, E. D. 1884 O, p. 118.
1891 A, p. 5.
Leidy, J. 1873 B, pp. 178, 342, pl. xxix, fig. 1.
Eocene (Bridger); Wyoming.

Trionyx vagans Cope.

Cope, E. D. 1874 B, p. 458.
1874 C, p. 29.
1875 E, pp. 96, 260, pl. vi, figs. 13, 14.
1875 I, p. 1.
1877 G, p. 573.
Leidy, J. 1856 Q, p. 312. (T. foveatus.)
Cretaceous (Laramie); Colorado, Montana, Saskatchewan.

Trionyx ventricosus Cope.

Cope, E. D. 1877 K, p. 45.
1884 O, p. 118.
Eocene (Wasatch); New Mexico.

Trionyx virginianus Clark.

Clark, W. B. 1895 A, p. 4.
1897 A, p. 59, pl. viii, figs. 1*a*, 1*b*.
Eocene; Virginia.

Trionyx sp. indet.

Unnamed specimens of Trionyx have been reported as follows: Leidy, J. 1873 B, pp. 180, 342, pl. xvi, figs. 11, 12; Eocene, Wyoming. Leidy, J. 1877 A, p. 233, pl. xxxiv, fig. 3; Phosphate beds, South Carolina. Cope, E. D. 1867 C, p. 143; Miocene, Maryland. Cope, E. D. 1888 CC, p. 301; Puerco beds, New Mexico.

AXESTEMYS Hay. Type *Axestus byssinus* Cope.

Hay, O. P. 1899 G, p. 348.

The following authors call this genus *Axestus;* but this name is preoccupied in entomology.

Cope, E. D. 1872 M, p. 462.
1873 E, p. 615.
1882 E, p. 144.
1884 O, pp. 112, 116.
Lydekker, R. 1889 G, p. 7.
Nicholson and Lyddeker 1889 A, p. 1118.
Zittel, K. A. 1890 A, p. 517.

Axestemys byssinus (Cope).

Cope, E. D. 1872 M, p. 462. (Axestus bysimus; misprint.)
1873 E, p. 616. (Axestus.)
1884 O, p. 116, pl. xv, figs. 1–12. (Axestus.)
Hay, O. P. 1899 G, p. 348.
Eocene (Bridger); Wyoming.

Order PLESIOSAURIA.

Andrews, C. W. 1895 C.
1895 D. (Sauropterygia.)
1895 E.
1896 A.
Baur, G. 1886 F. (Sauropterygia.)
1887 A, p. 485. (Sauropterygia.)
1887 C. (Sauropterygia.)
1890 B.
Cope, E. D. 1869 M, p. 31. (Sauropterygia.)
1871 B, p. 235. (Sauropterygia.)
1872 F, p. 327. (Sauropterygia.)
1875 E, p. 69. (Sauropterygia.)
1879 I. (Sauropterygia.)
1885 G, p. 246. (Sauropterygia.)
1887 G, p. 564. (Polycotylinæ.)
1887 S, p. 334. (Sauropterygia.)
1888 S.
1889 R, p. 863.
1891 N, p. 39.
1892 R. (Sauropterygia.)
1892 Z, p. 21. (Sauropterygia.)
1898 B, pp. 55, 66.
1900 A, p. 159.
Dames, W. 1895 A.
Deecke, W. 1895 A. (Nothosaurus.)
Fürbringer, M. 1900 A, pp. 321, 527, 635. (Sauropterygia.)
Gadow, H. 1898 A, p. 23. (Plesiosauri.)
Gegenbaur, C. 1898 A.
Geissler, G. 1895 A. (Nothosaurus.)
Günther, A. 1886 A, p. 444. (Sauropterygia.)
Gürich, G. 1891 B. (Nothosaurus.)
Haeckel, E. 1895 A, p. 335. (Sauropterygia.)
Hay, O. P. 1899 F, p. 682.
Hulke, J. W. 1892 A. (Sauropterygia.)
Huxley, T. H. 1872 A, p. 180.
Koken, E. 1893 A.
Kükenthal, W. 1890 C, p. 176.
Lydekker, R. 1889 F, p. 118. (Sauropterygia.)
Meyer, H. 1855 A. (Nothosaurus.)
Nicholson and Lydekker 1889 A, p. 1067. (Sauropterygia.)
Owen, R. 1840 E.
1847 E.
1860 A, p. 159. (Sauropterygia.)
1860 E, p. 211. (Sauropterygia.)
1866 A, p. 16. (Sauropterygia.)
1883 A. (Sauropterygia.)
Quenstedt, F. A. 1852 A, p. 130. (Plesiosauri.)
1885 A, p. 208. (Plesiosauri.)
Seeley, H. G. 1874 A.
1892 B, p. 121. (Sauropterygia.)
Steinmann and Döderlein 1890 A, p. 625. (Sauropterygia.)
Woodward, A. S. 1898 B, p. 159. (Sauropterygia.)
Zittel, K. A. 1890 A, p. 473. (Sauropterygia.)

PLESIOSAURIDÆ.

Fürbringer, M. 1900 A.
Hoffmann, C. K. 1890 B.
Hulke, J. W. 1892 A.
Huxley, T. H. 1858 B.
Lydekker, R. 1889 F, p. 120.
Nicholson and Lydekker 1889 A, p. 1074.
Owen R, 1866 A.
Sauvage, H. E. 1878 A.
Seeley, H. G. 1892 B.
Steinmann and Döderlein 1890 A, p. 628.
Zittel, K. A. 1890 A, p. 486.

PLESIOSAURUS Conybeare. Type *P. dolichodeirus* Conybeare.

Conybeare, W. D., 1821, Trans. Geol. Soc., v, pt. 2, p. 560.
Andrews, C. W. 1895 B.
1895 C.
1896 A.
Barrett, L. 1859 A.
Buckland, W. 1837 A, i, p. 157; ii, pls. xvi-xix.
Conybeare, W. D. 1824 A, p. 119.
Cope, E. D. 1870 D, p. 274. (Taphrosaurus, type *P. lockwoodii.*)
1875 E, pp. 88, 256.
1879 A, p. 34.
Cuvier, G. 1834 A, x, pp. 445-470, pls. cclix, cclx.
Dames, W. 1895 A.
Fürbringer, M. 1900 A, p. 326.
Hulke, J. W. 1883 A.
1892 A.
Huxley, T. H. 1872 A, p. 182.
Kiprijanoff, W. 1882 A.
Lydekker, R. 1889 F, pp. viii, 251.
Marsh, O. C. 1877 E.
Newberry, J. S. 1875 A, p. 18.
Owen, R. 1840 A, p. 49.
1840 E.
1845 B, p. 275, pls. lxxiii, lxxiv.
1851 B, p. 58.
1860 A, p. 160.
1860 E, p. 233.
1864 B, p. 1.
1865 A, p. 1.
1883 A.
Pictet, F. J. 1853 A, p. 534.
Quenstedt, F. A. 1852 A, p. 130.
1885 A, p. 208.
Sauvage, H. E. 1878 A.
Seeley, H. G. 1874 A.
1887 C.
1888 A.
1892 B.
1896 A.
Sollas, W. J. 1882 A.
Steinmann and Döderlein 1890 A, p. 629.
Williston S. W. 1893 A.
1894 A.
Winckler, T. C. 1873 A.
Woodward, A. S. 1888 I, p. 277.
1898 B, p. 165.
Zittel, K. A. 1890 A, p. 486.

Plesiosaurus brevifemur Cope.

Cope, E. D. 1875 E, p. 256.
1869 M, p. 41, figs. 13-15; p. 43, in part. (Cimoliasaurus magnus.)
Cretaceous (Green-sand No. 5); New Jersey.

Plesiosaurus gouldii Willist.

Williston, S. W. 1897 C.
Cretaceous (Comanche); Kansas.

Plesiosaurus gulo Cope.

Cope, E. D. 1872 BB.
1872 GG.
1874 C, p. 28.
1875 E, pp. 52, 88, 256.
Cretaceous (Niobrara); Kansas.

Plesiosaurus lockwoodii Cope.

Cope, E. D. 1869 M, p. 40.
1870 D, p. 274. (Taphrosaurus.)
1875 E, p. 256. (Plesiosaurus.)
Cretaceous (Clay No. 1); New Jersey.

Plesiosaurus mudgei Cragin.

Cragin, F. W. 1894 A, p. 69, pl. i, figs. 1-3, 4?.
Cretaceous (Neocomian); Kansas.

Plesiosaurus shirleyensis Knight.

Knight, W. C. 1900 A, p. 115, figs. A and C.
Jurassic (Shirley); Wyoming.

PANTOSAURUS Marsh. Type *Parasaurus striatus* Marsh.

Marsh, O. C. 1893 J, p. 159. (To replace Parasaurus Marsh, preoccupied.)
1891 F, p. 338. (Parasaurus; no definition.)
1895 A, p. 406.

Pantosaurus striatus Marsh.

Marsh, O. C. 1893 J, p. 159.
Marsh, O. C.. 1891 F, p. 338. (Parasaurus; no description.)
1895 A, p. 406, fig. 3.
1897 C, p. 485, fig. 32.
Jurassic; Wyoming.

PIRATOSAURUS Leidy. Type *P. plicatus* Leidy.

Leidy, J. 1865 A, p. 29.
Zittel, K. A. 1890 A, p. 498.
A genus of uncertain affinities.

Piratosaurus plicatus Leidy.

Leidy, J. 1865 A, pp. 29, 116, pl. xix, fig. 8.
Cope, E. D. 1869 M, p. 56.
1875 E, p. 254.
Leidy, J. 1865 D, p. 68.
Cretaceous; Minnesota.

NOTHOSAUROPS Leidy. Type *N. occiduus* Leidy.

Leidy, J. 1870 U.
Cope, E. D. 1874 C, p. 28. (Syn. of Plesiosaurus.)
1875 E, p. 256. (Syn. of Plesiosaurus.)
Leidy, J. 1873 B, p. 287. (Nothosaurus.)
Zittel, K. A. 1890 A, p. 600. (Syn.? of Champsosaurus.)
A genus of uncertain position.

Nothosaurops occiduus Leidy.

Leidy, J. 1870 U.
Cope, E. D. 1874 C, p. 28. (Plesiosaurus.)
1875 E, p. 256. (Plesiosaurus.)
Leidy, J. 1873 B, pp. 287, 345, pl. xv, figs. 11-13. (Nothosaurus.)
Cretaceous (Laramie); S. Dakota.

MEGALNEUSAURUS Knight. Type *Cimoliosaurus rex* Knight.

Knight, W. C. 1898 B, p. 378.

Megalneusaurus rex Knight.

Knight, W. C. 1895 A. (Cimoliosaurus.)
1898 B, p. 379, figs. 1-3.
Jurassic; Wyoming.

ELASMOSAURIDÆ

Cope, E. D. 1869 M, p. 47.
1875 E, pp. 69, 78.
Fürbringer, M. 1900 A, pp. 322, 527.
Seeley, H. G. 1892 B, pp. 134, 151.

POLYCOTYLUS Cope. Type *P. latipinnis* Cope.

Cope, E. D. 1869 D.
1869 M, p. 34.
1871 D, p. 386.
1872 F, p. 335.
1875 E, p. 70.
1887 G, p. 564.
1888 S.
Lydekker, R. 1889 C, p. 52. (Syn. of Cimoliasaurus.)
Nicholson and Lydekker 1889 A, p. 1077. (Syn. of Cimoliasaurus.)
Sauvage, H. E. 1876 A.
1878 A, p. 35.
Seeley, H. G. 1892 B, p. 135.
Zittel, K. A. 1890 A, p. 491. (Syn. of Cimoliasaurus.)

Polycotylus latipinnis Cope.

Cope, E. D. 1869 D.
1869 M, p. 36, pl. i, figs. 1-12.
1871 D, p. 388.
1872 F, pp. 320, 335.
1874 C, p. 27.
1875 E, pp. 45, 72, 255, pl. vii, figs. 7, 7*a*
Leidy, J. 1873 B, p. 279.
Cretaceous (Niobrara); Kansas, Nebraska

PIPTOMERUS Cope. Type *P. megaloporus* Cope.

Cope, E. D. 1887 G, p. 564.
Lydekker, R. 1889 C, p. 182.
Seeley, H. G. 1892 B, pp. 136, 138.
Zittel, K. A. 1890 A, p. 495.

Piptomerus hexagonus Cope.

Cope, E. D. 1887 G, p. 565.
Cretaceous (Fox Hills); N. Mexico.

Piptomerus megaloporus Cope.

Cope, E. D. 1887 G, p. 564.
Cretaceous (Fox Hills); N. Mexico.

Piptomerus microporus Cope.

Cope, E. D. 1887 G, p. 565.
Cretaceous (Fox Hills); N. Mexico.

URONAUTES Cope. Type *U. cetiformis* Cope.

Cope, E D. 1876 I, p. 345.
Lydekker, R. 1889 F, p. 182.
Seeley, H. G. 1892 B, p. 136.
Zittel, K. A. 1890 A, p. 498.

Uronautes cetiformis Cope.

Cope, E. D. 1876 I, p. 346.
Cretaceous (Fox Hills); Montana.

Uronautes sp. indet.

Cope, E. D. 1887 G, p. 566.
Cretaceous (Fox Hills); New Mexico.

TRINACROMERUM Cragin. Type *T. bentonianum* Cragin.

Cragin, F. W. 1888 A.
Cope, E. D. 1894 B, p. 111.
Cragin, F. W. 1891 A.
Lydekker, R. 1889 F, p. 180. (Syn. of Cimoliasaurus.)
Nicholson and Lydekker 1889 A, p. 1079. (Trinacromerum.)
Seeley, H. G. 1892 B, pp. 136, 151.
Zittel, K. A. 1890 A, p. 495.

Trinacromerum bentonianum Cragin.

Cragin, F. W. 1888 A.
1891 A.
Cretaceous (Benton); Kansas.

ELASMOSAURUS Cope. Type *E. platyurus* Cope.

Cope, E. D. 1868 A.
1868 H.
1869 A, p. 266.
1869 K, p. 86.
1869 M, pp. 40, 44, 47, and ii.
1870 C.
1871 D, p. 391.
1872 F, p. 336.
1875 E, pp. 75, 78, 255.
1877 G, p. 577.
1879 I.
1888 S, p. 725.
Hulke, J. W. 1883 A.
1892 A.
Leidy, J. 1851 G, p. 326. (Discosaurus, type *D. vetustus* Leidy.)
1870 A. (Discosaurus=Elasmosaurus.)
1870 C.
1870 H, p. 18.
1870 I, p. 18.
Lydekker, R. 1888 E.
1889 C, p. 53. (Syn. of Cimoliasaurus.)
1889 F, p. 180. (Syn. of Cimoliasaurus.)
Nicholson and Lydekker 1889 A, p. 1077. (Syn. of Cimoliasaurus.)
Sauvage, H. E. 1878 A.
Seeley, H. G. 1892 B, p. 134.
Zittel, K. A. 1890 A, p. 491. (Syn. of Cimoliasaurus.)

Elasmosaurus intermedius Cope.

Cope, E. D. 1894 B, p. 112.
Cretaceous (Pierre); S. Dakota.

Elasmosaurus orientalis Cope.

Cope, E. D. 1868 M.
1869 A, p. 266.
1869 B, p. 733.

Cope, E. D. 1869 K, p. 87.
1869 M, pp. 42, 55, pl. ii, fig. 10.
1870 C.
1875 E, p. 255.
1877 G, pp. 567, 578.
1877 U.
Leidy, J. 1870 I, p. 22. (Discosaurus.)
Cretaceous; New Jersey, Upper Missouri region.

Elasmosaurus platyurus Cope.

Cope, E. D. 1868 A.
1868 D.
1869 A, p. 266.
1869 K, p. 87.
1869 M, p. 47, text figs. 7-12; pl. ii, figs. 1-9, pl. iii.
1870 B.
1871 C, p. 47.
1871 D, p. 393.
1872 F, pp. 320, 336.
1875 E, pp. 44, 79, 256.
1877 G, p. 578.
1888 S.
Leidy, J. 1870 A.
1870 G, p. 10.
1870 I, pp. 18, 22.
Lydekker, R. 1889 F, p. 181. (Cimoliasaurus.)
Cretaceous (Niobrara); Kansas.

Elasmosaurus serpentinus Cope.

Cope, E. D. 1877 G, p. 578.
1877 U.
Cretaceous (Niobrara); Nebraska.

Elasmosaurus sp. indet.

Cope, E. D. 1894 B, p. 113.
Cretaceous (Niobrara); Dakota

CIMOLIASAURUS Leidy. Type *C. magnus* Leidy.

Leidy, J. 1851 G, p. 325.
Cope, E. D. 1868 H.
1869 A, p. 266.
1869 K, p. 86.
1869 M, p. 40.
1870 B.
1870 C.
1871 D, p. 393.
1875 E, pp. 75, 78, 255.
1888 S, p. 725.
Fürbringer, M. 1900 A, p. 885.
Koken, E. 1896 A, p. 9.
Leidy, J. 1851 G, p. 326. (Discosaurus, type *D. vetustus.*)
1854 B. (Brimosaurus, type *B. grandis.*)
Leidy, J. 1865 A, pp. 22, 25, 76, 103, 116. (Cimoliasaurus, Discosaurus.)
1870 A. (Discosaurus.)
1870 B. (Discosaurus, Cimoliasaurus
1870 G. (Brimosaurus.)
1870 H, p. 21.
1870 I. (Discosaurus.)
Lydekker, R. 1888 E.
1889 C, p. 53.
1889 F, pp. viii, 180.
Nicholson and Lydekker 1889 A, p. 1077.
Seeley, H. G. 1892 B, p. 135.
Williston, S. W. 1890 A.
Woodward, A. S. 1898 B, p. 169.
Zittel, K. A. 1890 A, p. 491.

Cimoliasaurus grandis (Leidy).

Leidy, J. 1854 B, pl. ii, figs. 1–3. (Brimosaurus.)
Cope, E. D. 1869 A, p. 266.
1869 M, pp. 43, 54.
1870 C.
1871 D, p. 400.
1875 E, p. 255.
Leidy, J. 1870 G, p. 10. (Brimosaurus.)
1870 I, p. 22. (Discosaurus.)
Cretaceous; Arkansas.

Cimoliasaurus laramiensis Knight.

Knight, W. C. 1900 A, p, 117, figs. B and D.
Jurassic (Shirley); Wyoming.

Cimoliasaurus magnus Leidy.

Leidy, J. 1851 G, p. 325.
Cope, E. D. 1869 A, p. 266.
1869 B, p. 733.
1869 K, p. 87.
1869 M, pp. 42, 43 (part), fig. 16; not figs. 13–15.
1870 B.
1870 C.
1875 E, p. 255.
Leidy J. 1854 B, pl. ii, figs. 4–6.
1865 A, pp. 25, 116, pl. v, figs. 13–19; pl. vi, figs. 1–18.
1870 G, p. 10.
1870 I, p. 22. (Discosaurus.)
Lydekker, R, 1889 F, p. 211.
Cretaceous (Green-sand No. 5); New Jersey.

Cimoliasaurus planior (Leidy).

Leidy, J. 1870 I, pp. 20, 22. (Discosaurus,)
Cope, E. D. 1875 E, p. 255.
Leidy J. 1865 A, p. 23, par. 2, pl. v, figs. 10–12. (Discosaurus vetustus.)
1865 D, p. 68. (Discosaurus vetustus, part.)
Cretaceous; Mississippi.

Cimoliasaurus snowii Williston.

Williston, S. W. 1890 A, p. 262.
Cope, E. D. 1894 B, p. 109, figure.
Williston, S. W. 1890 D, figs. 1, 2.
Cretaceous (Niobrara); Kansas.

Cimoliasaurus vetustus (Leidy).

Leidy, J. 1851 G, p. 326. (Discosaurus.)
Cope, E. D. 1869 A, p. 266. (C. magnus, *fide* Leidy.)
1869 M, p. 42.
1870 B, p. 141. (Discosaurus.)
1875 E, p. 255.
Leidy, J. 1865 A, pp. 22, 116, pl. iv, figs. 13–18, pl. v, figs. 1–9. (Discosaurus.)
1865 D, p. 68, in part. (Discosaurus.)
1870 I, p. 21. (Discosaurus.)
Lydekker, R. 1889 F, p. 211. (Syn. of C. magnus.)
Cretaceous; Alabama, New Jersey.

The vertebræ figured on pl. v, figs. 4, 5, 6, of Leidy 1865 A, must be regarded as the type of this species.

Cimoliasaurus sp. indet.

Williston, S. W. 1894 B, p. 2, pl. i, figs. 1, 2.
Cretaceous; Kansas.

OROPHOSAURUS Cope. Type *O. pauciporus* Cope.

Cope, E. D. 1887 G, p. 564.
1894 B, p. 311.
Lydekker R, 1889 F, p. 182.
Seeley, H. G. 1892 B, p. 136.
Zittel, K. A. 1890 A, p. 491. (Syn. of Cimoliasaurus.)

Orophosaurus pauciporus Cope.

Cope, E. D. 1887 G, p. 565.
Cretaceous (Fox Hills); New Mexico.

EMBAPHIAS Cope. Type *E. circulosus* Cope.

Cope, E. D. 1894 B, p. 111.

Embaphias circulosus Cope.

Cope, E. D. 1894 B, p. 111.
Cretaceous (Pierre); South Dakota.

OLIGOSIMUS Leidy. Type *O. grandævus* Leidy.

Leidy, J. 1872 E, p. 39.
1873 B, p. 286.
Lydekker, R. 1889 C, p. 180. (Syn. ? of Cimoliasaurus.)
Seeley, H. G. 1892 B, p. 135.
Zittel, K. A. 1890 A, p. 495. (Oligosomus.)

Oligosimus grandævus Leidy.

Leidy, J. 1872 E, p. 39.
1873 B, pp. 286, 345, pl. xvi, figs. 18, 19.
Cretaceous?; Wyoming.

Order RHYNCHOCEPHALIA Günther.

Günther, A. 1867 A, p. 626.
Ammon, L. 1885 A. (Homœosaurus.)
Andreæ, A. 1893 A.
Baur, G. 1885 E, p. 685.
1886 E.
Baur, G. 1886 G, pp. 685, 733.
1886 M, p. 304.
1887 A, p. 486.
1887 C.
1889 B, p. 45.

Baur, G. 1894 A, p. 321.
1895 E.
1900 A, p. 160.
Baur and Case 1897 A.
Boulenger, G. A. 1889 A, p 1.
1891 B.
Burckhardt, R. 1895 A.
Case, E. C. 1898 A, p. 71.
Cope, E. D. 1869 M, p. 33.
1871 B.
1878 G, p. 306.
1880 A, p. 38.
1885 G, p. 246.
1887 E.
1887 S, p. 334.
1889 R, p. 863.
1891 N, p. 45.
1892 R.
1898 B, pp. 56, 73.
Credner, H. 1888 A.
Fürbringer, M. 1888 A.
Fürbringer, M. 1900 A, pp. 276, 531, 589.
Gadow, H. 1898 A, p. 18. (Rhynchocephali.)
Gaupp, E. 1894 A.
Gegenbaur, C. 1898 A.
Haeckel, E. 1895 A, p. 305.
Hoffmann, C. K. 1890 B.
Huxley, T. H. 1872 A, p. 194.
Lortet, L. 1892 A, p. 29.
Lydekker, R. 1888 B, p. 291.
Meyer, H. 1856 B. (Protorosaurus.)
1860 D, p. 106. (Homœosaurus.)
Mivart, St. G. 1886 A, p. 448.
Nicholson and Lydekker 1889 A, p. 1131.
Osborn, H. F. 1900 A, p. 1.
Perrin, A. 1895 A.
Siebenrock, F. 1894 B. (Hatteria.)
Steinmann and Döderlein 1890 A, p. 619.
Wagner, A. 1853 A, p. 254.
Woodward, A. S. 1898 B, p. 183.
Zittel, K. A. 1890 A, pp. 451, 583.

SPHENODON Gray. Type *Hatteria punctata* Gray.

Gray, J. E., 1831, Zool. Miscell., p. 13.

On account of the importance of the genus *Sphenodon* in ascertaining the relationship of the reptiles, the following references are given to the literature of this animal:

Ammon, L. 1885 A. (Hatteria.)
Andreæ, A. 1893 A. (Hatteria.)
Baur, G. 1886 A.
1886 B.
1886 K.
1886 L.
1891 C, p. 345.
1892 D, p. 207.
Bayer, F. 1885 A.
Boulenger, G. A. 1889 A, p. 2.
Burckhardt, R. 1900 A.
Credner, H. 1888 A.
Dollo, L. 1891 A.
Fürbringer, M. 1900 A.
Gadow, H. 1896 A, p. 37.
Günther, A. 1867 A. (Hatteria.)
Hay, O. P. 1898 F, p. 945.
Howes and Swinnerton 1900 A, p. 516.
Huxley, T. H. 1869 C.
1887 A.
Kehrer, G. 1886 A, p. 83.
Osawa, G. 1898 A. (Hatteria.)
Osborn, H. F. 1900 A, p. 1.
Siebenrock, F, 1894 B.
Tomes, C. 1898 A, p. 273.
Zittel, K. A. 1890 A, p. 583.

CHAMPSOSAURIDÆ.

Cope, E. D. 1884 O, p. 106.
Boulenger, G. A. 1891 B, p. 169.
Burckhardt, R. 1900 A, p. 534.
Cope, E. D. 1876 I, p. 350. (Choristodera.)
1882 J, p. 981. (Choristodera.)
1884 BB.
1891 N, p. 45. (Choristodera.)
Cope, E. D. 1898 B, p. 73. (Choristodera.)
Dollo, L. 1884 C, p. 160. (Simædosauria.)
Lemoine, V. 1884 A.
1884 B. (Simædosauria.)
1885 A. (Simædosauria.)
Nicholson and Lydekker 1889 A, p. 1133.
Zittel, K. A. 1890 A, p. 599.

CHAMPSOSAURUS Cope. Type *C. profundus* Cope.

Cope, E. D. 1876 I, p. 348.
Andreæ, A. 1893 A, p. 33.
Baur, G. 1887 C, p. 100.
1895 E.
Cope, E. D. 1883 E.
1884 O, p. 104.
1888 C.
Dollo, L. 1884 C, p. 154. (Simædosaurus.)
1885 A.
1891 A.
1893 B, p. 79.
Fürbringer, M. 1900 A, p. 291.
Koken, E. 1886 A.
Lemoine, V. 1884 A. (Simædosaurus.)
1884 B. (Simædosaurus.)
1885 A. (Simædosaurus.)
1885 B. (Simædosaurus.)
1893 A, p. 364. (Simædosaurus.)
Nicholson and Lydekker 1889 A, p. 1133.
Steinmann and Döderlein 1890 A, p. 622.
Woodward, A. S. 1898 B, p. 189.
Zittel, K. A. 1890 A, p. 600.

Champsosaurus annectens Cope.

Cope, E. D. 1876 I, p. 351.
1877 G, p. 573.
Cretaceous (Laramie); **Montana.**

Champsosaurus australis Cope.

Cope, E. D. 1881 T.
1884 O, p. 107, pl. xxiii *b*, figs. 1–4.
1888 CC, p. 301.
Eocene (Puerco); N. Mexico.

Champsosaurus brevicollis Cope.

Cope, E. D. 1876 I, p. 352.
1877 G, p. 573.
Cretaceous (Laramie); Montana.

Champsosaurus profundus Cope.

Cope, E. D. 1876 I, p. 350.
1877 G, p. 573.
Cretaceous (Laramie); Montana.

Champsosaurus puercensis Cope.

Cope, E. D. 1882 E, p. 195.
1884 O, p. 107, pl. xxiii *b*, figs. 5–10.
1888 CC, p. 301.
Eocene (Puerco); N. Mexico.

Champsosaurus saponensis Cope.

Cope, E. D. 1882 E, p. 196.
1884 O, p. 109, pl. xxiii, figs. 11–22.
1888 CC, p. 301.
Eocene (Puerco); N. Mexico.

Champsosaurus vaccinsulensis Cope.

Cope, E. D. 1876 I, p. 353.
1877 G, p. 573.
Cretaceous (Laramie); Montana.

RHABDOPELIX Cope. Type *R. longispinis* Cope.

Cope, E. D. 1869 M, p. 169.
The position of this genus in the zoological system is problematical.

Rhabdopelix longispinis Cope.

Cope, E. D. 1869 M, pp. 170, 245, fig. 46.
1866 G. (Pterodactylus; no description.)
1870 I, p. 445.
Triassic; Pennsylvania.

ISCHYROTHERIUM Leidy. Type *I. antiquum* Leidy.

Leidy, J. 1856 I, p. 89.
Cope, E. D. 1869 M, p. 38. (Ischyrosaurus.)
1874 R. (Ischyrosaurus.)
1875 E, p. 256. (Ischyrosaurus.)
1884 O, p. 106. (Ischyrosaurus.)
Leidy, J. 1874 A.
Zittel, K. A. 1890 A, p. 498. (Ischyrosaurus.)
The position of this genus is uncertain.

Ischyrotherium antiquum Leidy.

Leidy, J. 1856 I, p. 89.
Cope, E. D. 1869 M, p 39. (Ischyrosaurus.)
1874 C, p. 28. (Ischyrosaurus.)
1875 E, p. 256. (Ischyrosaurus.)
Leidy, J. 1860 A, p. 150, pl. x, figs. 8–17.
1869 A, p. 414.
Lepsius, G. R. 1881 A, p. 185. (Syn. of Prorastomus sirenoides.)

Order ICHTHYOSAURIA Blainville.

Agassiz, L. 1843 A, p. 84. (Icththyosauria.)
Bauer, F. 1898 A, p. 283.
Baur, G. 1886 F. (Ichthyopterygia.)
1887 A. (Ichthyopterygia.)
1887 C, p. 95. (Ichthyopterygia.)
1887 D. (Ichthyopterygia.)
1887 F. (Ichthyopterygia.)
1890 B. (Ichthyosauria.)
1891 C, p. 354. (Ichthyosauria.)
1895 C. (Ichthyosauria.)
1895 E. (Ichthyosauria.)
Cope, E. D. 1869 M, pp. 26, 27. (Ichthyopterygia.)
1871 B. (Ichthyopterygia.)
1887 S, p. 333. (Ichthyopterygia.)
1888 S. (Ichthyosauria.)
1889 R, p. 863. (Ichthyopterygia.)
1892 R. (Ichthyopterygia.)
1895 C. (Ichthyosauria.)
1898 B, pp. 55, 64. (Ichthyopterygia.)
1900 A, p. 159. (Ichthyopterygia.)
Dames, W. 1893 A. (Ichthyopterygia.)
1895 B, p. 1045. ("Ichthyosaurier.")
Fraas, E. 1891 A.
Fürbringer, M. 1900 A. (Ichthyopterygia.)
Gadow, H. 1898 A, p. 24.
Gaudry, A. 1890 A, p. 179.
Gegenbaur, C. 1864 A, p. 31. (Enaliosauria.)
1865 B, p. 51. (Enaliosauria.)
1898 A.
Haeckel, E. 1895 A, p. 337. (Ichthyopterygia.)
Hay, O. P. 1899 F, p. 682. (Ichthyosauria.)
Hoffmann, C. K. 1890 B. (Ichthyosauria.)
Hulke, J. W. 1883 A. (Ichthyosauria.)
1892 A. (Ichthyosauria.)
Huxley, T. H. 1872 A, p. 208. (Ichthyosauria.)
Jaeger, G. F. 1828 A. (Ichthyosauria.)
Conybeare, Trans. Geol. Soc., London (1), v, pt. 2, p. 563. (Ichthyosaurus.)
Kükenthal, W. 1890 C, p. 176. (Ichthyosauria.)
1891 C. (Ichthyosauria.)
1893 A, p. 54. (Ichthyosauria.)
Lydekker, R. 1888 D. (Ichthyopterygia.)
1889 F, p. 1. (Ichthyopterygia.)
1892 B. (Ichthyosauria.)
Marsh, O. C. 1879 A, p. 85. (Sauranodonta.)
1880 E, p. 491. (Baptanodonta.)
Nicholson and Lydekker 1889 A, p. 1120 (Ichthyopterygia); p. 1124 (Ichthyosauria).
Owen, R. 1838 B, p. 660. (Ichthyosauri.)
1860 A, p. 159. (Ichthyopterygia.)
1860 E, p. 198. (Ichthyopterygia.)
1866 A. (Ichthyopterygia.)

Owen, R. 1881 A. (Ichthyopterygia.)
Quenstedt, F. A. 1852 A, p. 120. (Ichthyosauri.)
1885 A, p. 194. (Ichthyosauri.)
Rohon, J. V. 1899 B, p. 13. ("Ichthyosaurier.")
Seeley, H. G. 1891 A. (Ichthyosauria.)
Seeley, H. G. 1892 B, p. 119. (Ichthyosauria.)
1900 A, p. 645. (Ichthyosauria.)
Steinmann and Döderlein 1890 A, p. 640. (Ichthyopterygia.)
Woodward, A. S. 1898 B, p. 176. (Ichthyopterygia.)
Zittel, K. A. 1890 A, p. 451. (Ichthyosauria.)

PROTEOSAURIDÆ nom. nov.

This family has hitherto borne the name *Ichthyosauridæ*. The revival of the generic name *Proteosaurus* for the genus hitherto called *Ichthyosaurus*, requires a corresponding change in the family name. The following writers employ the name *Ichthyosauridæ*.

Bauer, F. 1898 A, p. 283.
1900 A, p. 574.
Baur, G. 1887 D.
Dames, W. 1895 B, p. 1045.
Fraas, E. 1891 A.
1892 B.
Fürbringer, M. 1900 A, p. 627.
Günther, A. C. 1886 A, p. 442.
Kiprijanoff, W. 1881 A.
Lydekker, R. 1889 F, p. 6.
Nicholson and Lydekker 1889 A, p. 1124.
Steinmann and Döderlein 1890 A, p. 642.

PROTEOSAURUS Home. Type *Ichthyosaurus platyodon* Conybeare.

Home, E. 1819 A.

Unless otherwise indicated, this genus is referred to by the following writers under the name *Ichthyosaurus*. *Proteosaurus*, however, clearly has priority. On this point see R. Lydekker in his "Catalogue Fossil Reptilia," pt. ii, p. vii. Although no species of this genus has as yet been, with certainty, discovered in America, a knowledge of its structure is essential in understanding the genus *Baptanodon;* hence citations of the literature are given.

Bauer, F. 1898 A, p. 283.
1900 A, p. 574.
Baur, G. 1886 H.
1887 A, p. 491.
1887 D.
1887 F.
1889 F, p. 467.
1895 B.
Buckland, W. 1837 A, i, p. 133; ii, pls. vii–xix.
Coles, H. 1853 A.
1824 A, p. 103.
Cope, E. D. 1871 B.
1892 Z, p. 17.
Cuvier, G. 1834 A, x, pp. 390–444, pls. cclvi–cclx.
Dames, W. 1893 A.
Dollo, L. 1892 A.
Egerton, P. G. 1837 A.
Fraas, E. 1888 A.
1891 A.
1892 A.
1892 B.
1894 A.
1898 A.
Gaudry, A. 1890 C, p. 179.
Home, E. 1819 B. (Proteosaurus.)
Hulke, J. W. 1883 A.
1892 A.
Huxley, T. H. 1872 A, p. 208.
Jaeger, G. F. 1828 A.
Kiprijanoff, W. 1881 A.
König, 1821, in Conybeare, W. D., 1821, Trans. Geol. Soc. Lond. (1), v. p. 563. (Ichthyosaurus, type *I. communis* Conybeare; not Ichthyosaura Latreille, 1802, Hist Nat. Rept., iv, p. 310, type *Proteus tritonius Laur.*)
Koken, E. 1883 A, p. 737.
Kükenthal, W. 1890 C.
1891 C, p. 392.
Lydekker, R. 1888 D.
1889 F, pp. vii, 12.
1889 I.
1892 B.
Maggi, L. 1898 B, figs. 1–5.
1898 C, figs. A, D.
Marsh, O. C. 1877 E.
Merian, P. 1875 A.
Moore, C. 1857 A.
Nicholson and Lydekker 1889 A, p. 1124.
Osborn, H. F. 1900 B, p. 116.
Owen, R. 1838 B, p. 660.
1840 A, p. 86.
1840 B.
1841 A.
1842 A, p. 193.
1845 B, p. 275, pls. lxxiii, lxxiiiA.
1851 B, p. 68.
1860 E, p. 200.
1866 A.
1881 A, p. 83.
Pearce, J. C. 1846 A.
Pictet, F. J. 1853 A, p. 531.
Quenstedt, F. A. 1852 A, p. 120.
1885 A, p. 195.
Sauvage, H. E. 1887 A.
Schulze, E. 1894 A, p. 1133.
Seeley, H. G. 1871 A.
1880 A.
1892 B, p. 119.
Steinmann and Döderlein 1890 A, p. 642.
Thompson, D. A. W. 1886 A.
Trautschold, H. 1879 A.
Woodward, A. S. 1886 B.
1888 I, p. 278.
1898 B, p. 179, with figures.
Zittel, K. A. 1890 A, p. 454.

Proteosaurus sp. indet.

Belcher, E. 1856 A. (Ichthyosaurus sp. indet.)
Marsh, O. C. 1896 F, p. 444. (Ichthyosaurus.)
Jurassic; Exmouth Island (lat. 77° 16′ N., long. 96° W.).

BAPTANODONTIDÆ.

Marsh, O. C. 1880 E, p. 491.
Baur, G. 1887 D.
  1887 F.
Haeckel, E. 1895 A, p. 340. (Baptanodontia.)
Marsh, O. C. 1879 A, p. 86. (Sauranodontidæ.)

BAPTANODON Marsh. Type *B. natans* Marsh.

Marsh, O. C. 1880 E, p. 491. (To replace Sauranodon, preoccupied.)
Bauer, F. 1898 A, p. 324.
Baur, G. 1886 F, p. 245.
  1887 D.
  1887 F.
Cope, E. D. 1879 M. (Sauranodon.)
Hulke, J. W. 1883 A. (Sauranodon.)
Lydekker, R. 1888 D. (Syn. of Ophthalmosaurus.)
  1888 E.
  1889 F, p. 6.
Marsh, O. C. 1879 A. (Sauranodon, type *S. natans.*)
  1880 B. (Sauranodon.)
  1891 F, p. 337.
  1897 C, p. 485.
Morse, E. S. 1880 A, p. 7.
Nicholson and Lydekker 1889 A, p. 1126.
Steinmann and Döderlein 1890 A, p. 642.
Wilder, B. G. 1880 A, p. 322. (Sauranodon.)
Zittel, K. A. 1890 A, p. 473.

Baptanodon discus Marsh.

Marsh, O. C. 1880 B, p. 171, figure. (Sauranodon.)
  1880 E, p. 491.
  1884 F, p. 183, fig. 148.
  1895 A, p. 405, fig. 1.
  1897 C, p. 485, fig. 30.
Wilder, B. G. 1880 A, p. 322. (Sauranodon.)
  Jurassic; Wyoming.

Baptanodon natans Marsh.

Marsh, O. C. 1879 A, p. 86. (Sauranodon.)
Cope, E. D. 1879 M, p. 271. (Sauranodon.)
Lydekker, R. 1889 F, p. 7, fig. 5.
Marsh, O. C. 1880 B, p. 169. (Sauranodon.)
  1880 E, p. 491.
  1895 A, p. 406, fig. 2.
  1897 C, p. 486, fig. 31.
  Jurassic; Wyoming.

CHONESPONDYLUS Leidy. Type *C. grandis* Leidy.

Leidy, J. 1868 C, p. 178.
  A genus of uncertain position.

Chonespondylus grandis Leidy.

Leidy, J. 1868 C, p. 176.
Cope, E. D. 1869 M, p. 29. (Ichthyosaurus.)
  Triassic; Nevada.

CYMBOSPONDYLUS Leidy. Type *C. piscosus* Leidy.

Leidy, J. 1868 C, p. 178.
  A genus of very uncertain position.

Cymbospondylus petrinus Leidy.

Leidy, J. 1868 C, p. 178.
Cope, E. D. 1869 M, p. 30.
  Triassic: Nevada.

Cymbospondylus piscosus Leidy.

Leidy, J. 1868 C, p. 178.
Cope, E. D. 1869 M, p. 30.
  Triassic; Nevada.

SHASTASAURUS Merriam. Type *S. pacificus* Merriam.

Merriam, J. C. 1895 A, p. 55.
Boulenger, G. A., 1896, Zool. Record; Rept., p. 29. (Schastasaurus.)
Dames, W. 1895 B, p. 1048.
  The position of this genus is in doubt.

Shastasaurus pacificus Merriam.

Merriam, J. C. 1895 A, p. 55, figs. 1, 2.
Dames, W. 1895 B, p. 1048.
  Triassic; California.

Order SQUAMATA Oppel.

Oppel, M., 1811, Ordnungen der Reptilien, p. 14.
Baur, G. 1887 A, p. 482. (Streptostylica.)
  1889 F, p. 473.
  1892 B, p. 20.
  1894 A, p. 327.
  1895 A.
  1896 A.
Boulenger, G. A. 1891 A, p. 117.
  1893 A, p. 1.
Calori, L. 1894 A.
Cope, E. D. 1864 A, p. 224.
  1889 R, p. 864.
  1891 N, p. 45.
  1892 R.
  1895 C.
  1895 E.
  1898 B, pp. 56, 74.
  1900 A, pp. 160, 175.

Cuvier, G. 1834 A, x.
Fürbringer, M. 1900 A.
Gray, J. E. 1837 A.
Günther, A. C. 1867 A, p. 625.
Haeckel, E. 1895 A, p. 340. (Lepidosauria.)
Hay, O. P. 1899 F, p. 682.
Lydekker, R. 1888 B, pp. viii, 248.
Müller, J. 1831 A, p. 199.
Nicholson and Lydekker 1889 A, p. 1137.
Stannius, H. 1856 A. (Streptostylica.)
Steinmann and Döderelin 1890 A, p. 644.
Woodward, A. S. 1898 B, p. 190.
Zittel, K. A. 1890 A, pp. 450, 602. (Lepidosauria.)

Suborder PYTHONOMORPHA Cope.

Cope, E. D. 1869 A, p. 258.
Ballou, W. H. 1898 A, p. 212.
Baur, G. 1887 C, p. 99.
Bemmelen, J. F. 1896 A, p. 333.
Boulenger, G. A. 1891 A, p. 117.
Cope, E. D. 1869 M, pp. 27, 29, 175.
1870 E.
1870 O.
1871 B.
1871 C, p. 400.
1872 F, pp. 321, 327, 328.
1872 CC.
1874 C, p. 30.
1875 E, pp. 113, 264, pl. xxxvi.
1878 G.
1879 A, p. 36.
1885 G, p. 246.
1887 S, p. 334.
1891 N, pp. 45, 50.
1892 Z, p. 19.
1895 C, p. 858.
1895 E, p. 1004.
Cope, E. D. 1896 A.
1898 B, p. 75.
Dana, J. B. 1896 A, p. 870.
Fürbringer, M. 1900 A, pp. 271, 615, 622. (Mosasauria.)
Gadow, H. 1898 A, p. 24.
Gaudry, A. 1892 A.
Haeckel, E. 1895 A, p. 349.
Hoffmann, C. K. 1890 B, p. 1320. (Mosasauria.)
Huxley, T. H. 1872 A, p. 197. (Mosasauria.)
Lydekker, R. 1888 B, p. 261.
Marsh, O. C. 1877 E. (Mosasauria.)
Merriam, J. C. 1894 A.
Nicholson and Lydekker 1889 A, p. 1143.
Osborn, H. F. 1899 I, p. 159.
1900 A, p. 1. ("Mosasaurs.")
Owen, R. 1878 B, p. 755.
Steinmann and Döderlein 1890 A, p. 645.
Williston, S. W. 1898 E, p. 170. (Mosasauria.)
Williston and Case 1892 A.
Woodward, A. S. 1898 B, p. 191, with figures.
Zittel, K. A. 1890 A, p. 611.

MOSASAURIDÆ.

Baur, G. 1890 A.
1890 B.
1892 B.
Cope, E. D. 1869 A, p. 258.
1869 M, pp. 182, 183.
1878 G.
1895 C.
Dollo, L, 1882 A.
1885 B.
1885 C.
1888 D.
1890 A.
1893 B.
Fürbringer, M. 1900 A.
Gaudry, A. 1890 C, p. 202.
Lydekker, R. 1888 B, p. 261.
Marsh, O. C. 1872 F.
1880 A.
Merriam, J. C. 1894 A.
Nicholson and Lydekker 1889 A, p. 1143.
Owen, R. 1877 A.
1878 B.
1879 B.
1880 A, p. 177.
Quenstedt, F. A. 1885 A, p. 189. (Mosasauri.)
Thévenin, A. 1896 A.
Williston, S. W. 1891 A.
1897 F.
1898 E.
Williston and Case 1892 A, p. 16.

MOSASAURINÆ.

Williston, S. W. 1897 F, pp. 177, 181.
Cope, E. D. 1869 A, p. 258. (Clidastidæ.)
1869 M, p. 182. (Clidastidæ.)
Marsh, O. C. 1876 G, p. 59. (Edestosauridæ.)
Williston, S. W. 1898 E, pp. 91, 196.

MOSASAURUS Conybeare. Type *M. belgicus* Holl.

Conybeare, 1822, in Parkinson's Introduct. Study Foss. Organ. Remains, p. 198.
Ballou, W. H. 1898 A, p. 212.
Baur, G. 1892 B.
Buckland, W. 1837 A, ii. p. 167, pl. xx.
Charlesworth, E. 1846 A.
Cope, E. D. 1869 A, p. 260.
1869 K, p. 85.
Cope, E. D. 1869 M, pp. 185, 186, fig. 47.
1874 C, p. 31.
1875 E, p. 128.
1878 G.
Cuvier, G. 1808 A, p. 145. ("Animal de Maestricht.")
1834 A, x, pp. 119–175, pls. cclvi–cclviii
De Kay, J. E. 1830 A.

Dollo, L. 1882 A, p. 56.
1888 D.
1890 A.
1893 A. (Leiodon, a synonym.)
1893 B. (Syn. of Plioplatecarpus.)
Gaudry, A. 1890 A, p. 202.
1892 A, p. 10.
Gibbes, R. W. 1850 A.
1851 A. (Mosasaurus, Holcodus; Amphorosteus, type *A. brumbyi.*)
Goldfuss, A. 1845 A.
Harlan, R. 1834 B, p. 81.
1835 J.
1839 A. (Batrachiosaurus.)
1839 B, p. 90. (Batrachiotherium.)
Holmes, F. S. 1849 A, p. 197.
Leidy, J. 1857 E.
1859 D.
1865 A, p. 30 (Mosasaurus); p. 118 (Baseodon, type *B. reversus*=M. dekayi).
1873 B, p. 270.
Lippincott, J. S. 1881 A.
Lydekker, R. 1888 B, p. 261.
Merriam, J. C. 1894 A.
Meyer, H. 1860 C.
1860 D, p. 98.
Nicholson and Lydekker 1889 A, p. 1144.
Owen, R. 1842 A, p. 144.
1845 B, p. 258.
1851 B, p. 29.
1877 A.
Pictet, F. J. 1853 A, p. 504 (Mosasaurus); p. 506 (Batrachiosaurus, Batrachiotherium).
Quenstedt, F. A. 1852 A, p. 116.
1885 A, p. 189.
Steinmann and Döderlein 1890 A, p. 646.
Thévenin, A. 1896 A.
1896 B.
Williston, S. W. 1897 F.
1898 E, p. 195.
Woodward, A. S. 1898 B, p. 194, with figures.
Zittel, K. A. 1890 A, p. 519.

Mosasaurus brumbyi (Gibbes.)

Gibbes, R. W. 1851 A, p. 10, pl. iii, figs. 10–16. (Amphorosteus.)
Cope, E. D. 1869 A, p. 264.
1869 M, pp. 198, and ii.
1870 O, p. 576.
1871 D, p. 411.
1875 E, p. 270.
Gibbes, R. W. 1850. (Name only.)
Leidy, J. 1865 A, pp. 37, 118. (Amphorosteus.)
Lydekker, R. 1888 B, p. 267. (Liodon.)
Cretaceous (Rotten limestone); Alabama.

Mosasaurus carolinensis Gibbes.

Gibbes, R. W. 1851 A, p. 8, pl. ii, figs. 1–3.
Cope, E. D. 1869 M, p. 193. (Syn. ? of M. dekayi.)
1875 E, p. 269. (Syn. ? of M. dekayi.)
Gibbes, R. W. 1850 A. (No description.)
Leidy, J. 1865 A, pp. 32, 117. (Syn. of M. mitchellii.)
Cretaceous; South Carolina.

Mosasaurus copeanus Marsh.

Marsh, O. C. 1869 B, p. 393.
Cope, E. D. 1869 M, p. 198.
1875 E, p. 270.
Marsh, O. C. 1872 F, p. 455.
Cretaceous (Green-sand No. 4); New Jersey.

Mosasaurus couperi Gibbes.

Gibbes, R. W. 1851 A, p. 7, pl. ii, figs. 4, 5.
Cope, E. D. 1869 M, p. 193. (Syn. ? of M. dekayi.)
1875 E, p. 269. (Syn. ? of M. dekayi.)
Gibbes, R. W. 1850 A. (No description.)
Leidy, J. 1865 A, pp. 32, 117. (Syn. of M. mitchillii.)
Cretaceous; Georgia.

Mosasaurus crassidens Marsh.

Marsh, O. C. 1870 F.
Cope, E. D. 1869 M, p. 198.
1875 E, p. 270.
1875 V, p. 41.
Cretaceous; North Carolina.

Mosasaurus dekayi Bronn.

Bronn, H. G. 1838 A, p. 760.
Cope, E. D. 1867 E. p. 27. (M. mitchilli.)
1869 A, p. 262. (M. mitchilli.)
1869 B, p. 733 (M. mitchilli); p. 734 (Baseodon reversus).
1869 K, p. 86. (M. mitchilli.)
1869 M, pp. 193, 235, (?) pl. xi, fig. 8; text figs. 48, 49.
1875 E, p. 269, pl. xxxvii, fig. 16.
1895 C, p. 859, pl. xxxi, figs. 2, 2*a*.
De Kay, J. E. 1830 A, p. 135. (Mosasaurus sp.)
1842 A, p. 28, pl. xxii, figs. 57, 58. (M. major.)
Emmons, E. 1858 B, p. 217, figs. 36A, 37. (M. maximiliani.)
Gibbes, R. W, 1850 A.
1851 A, p. 8, pl. i, figs. 2, 6.
Harlan, R. 1835 J. ("Saurian reptile.")
Leidy, J. 1865 A, p. 116, plates referred to, in part (M. mitchillii); p. 118, pl. x, figs. 14, 15 (Baseodon reversus.)
1865 D p. 70, in part.
Mitchill, S. L. 1818 A, pp. 384, 385, 431, pl. viii, fig. 4. ("Saurian.")
Morton, S. G. 1844 B, p. 132. (M. occidentalis; no description.)
Owen, R. 1849 A, p. 382, pl. x, fig. 5. (M. maximiliani.)
Cretaceous; New Jersey, South Carolina?.

Mosasaurus depressus Cope.

Cope, E. D. 1869 A, p. 262.
1869 B, p. 734.
1869 C.
1869 M, pp. 189, 196, pl. xi, fig. 6, text fig. 48.
1875 E, p. 269, pl. xxxvii, fig. 12.
Cretaceous; New Jersey.

Mosasaurus fulciatus Cope.

Cope, E. D. 1869 M, p. 194.
1870 E.
1875 E, p. 269, pl. xxxvii, fig. 13.
Cretaceous; New Jersey.

Mosasaurus horridus Williston.

Williston, S. W. 1898 E, pp. 108, 110, 115, 145, 147, 150, 152, 154, pls. xix-xxi; pl. xxxii.
Ballou, W. H. 1898 A, p. 217.
Williston, S. W. 1897 D, p. 95. (No description.)
Cretaceous (Niobrara); Kansas.

Mosasaurus maximus Cope.

Cope, E. D. 1869 A, p. 262.
1869 M, pp. 188, 189, pl. xi, fig. 7; text figs. 48, 49.
1870 R, p. 86.
1875 E, p. 269, pl. xxxvii, fig. 15.
Marsh, O. C. 1869 B, p. 398.
Whitfield, R. P. 1900 A, p. 25, pls. iv, v.
Cretaceous; New Jersey.

Mosasaurus miersii Marsh.

Marsh, O. C. 1869 B, p. 395.
Cope, E. D. 1869 M, p. 199.
1875 E, p. 270.
Cretaceous; New Jersey.

Mosasaurus minor Gibbes.

Gibbes, R. W. 1851 A, p. 7, pl. i, figs. 3-5.
Cope, E. D. 1869 A, p. 261.
1869 M, pp. 186, 189, 198.
1875 E, p. 270. (Syn.? of M. acutidens= Holcodus acutidens.)
Gibbes, R. W. 1850 A. (No description.)
Leidy, J. 1865 A, p. 118. (Holcodus acutidens.)
Cretaceous; Alabama.

Mosasaurus missouriensis (Harlan).

Harlan, R. 1834 D, p. 405, pl. xx. (Ichthyosaurus.)
Baur, G. 1892 B, p. 9. (M. maximiliani.)
Cope, E. D. 1869 A, p. 263.
1869 K, p. 86.
1869 M, pp. 189, 195.
1871 D, p. 401.
1875 E, pp. 219, 269.
Gibbes, R. W. 1850 A. (M. maximiliani.)
1851 A, p. 6, pl. i, fig. 7. (M. maximiliani.)
Goldfuss, A. 1845 A, pls. vi-ix. (M. maximiliani.)
1848, Versamml. deutsch. Naturf., Mainz, p. 141. (M. neovidii.)
Harlan, R. 1834 A. (Ichthyosaurus missouriensis; no description.)
1834 B, p. 80. (Ichthyosaurus.)
1834 D, p. 405, pl. xxx, figs. 3-8. (Ichthyosaurus.)
1834 E. (Ichthyosaurus.)
1835 B, p. 284. (Ichthyosaurus.)
1835 E. (Ichthyosaurus.)
1839 A. ("Batrachiosaurus.")
1839 B. ("Batrachotherium.")
1839 C. (Batrachiosaurus.)
1842 B, p. 142. (Batrachiotherium.)
Hoffman, C. K. 1890 B, p. 1320. (M. maximiliani.)
Leidy, J. 1865 A, p. 117, pl. vii, figs. 15-18; pl. viii, figs. 6, 8; pl. x, figs. 18, 19; pl. xvii, figs. 12, 13. (Determinations doubtful.)
Meyer, H. 1845 B, p. 313. (M. maximiliani, M. missouriensis.)
Pictet, F. J. 1853 A, p. 505. (M. maximiliani.)
Quenstedt, F. A. 1852 A, p. 118.
Zittel, K. A. 1890 A, p. 621. (M. maximiliani.)
Cretaceous; Nebraska.

Mosasaurus oarthrus Cope.

Cope, E. D. 1869 M, pp. 189, 196.
1870 E.
1875 E, p. 269, pl. xxxvii, fig. 17.
Cretaceous; New Jersey.

Mosasaurus princeps Marsh.

Marsh, O. C. 1869 B, p. 392.
Baur, G. 1892 B, p. 4.
Cope, E. D. 1869 M, pp. 188, 192.
1875 E, p. 269. (Syn. M. dekayi.)
Cretaceous; New Jersey.

Mosasaurus sp. indet.

Leidy, J. 1865 A, pp. 45, 118, pl. viii, figs. 9, 10.
1873 B, pp. 279, 343, pl. xxxvi, fig. 15.
Harlan, R. 1835 B, p. 285.

CLIDASTES Cope. Type *C. iguanavus* Cope.

Cope, E. D. 1868 H, p. 181. (Clidastes; Nectoportheus, type *N. validus* Cope.)
1868 K, p. 233.
1869 A.
1869 M, p. 211, figs. 50-52.
1871 D, p. 412.
1871 N, p. 266.
1872 F, pp. 322, 330.
1874 C, p. 31.
1875 E, pp. 128, 130, pl. lv.
1878 G.
Dollo, L. 1885 C, p. 29 (Edestosaurus); p. 30 (Clidastes).
Lydekker, R. 1888 B, p. 272.
Marsh, O. C. 1871 B, p. 447. (Edestosaurus, type *E. dispar* Marsh.)
1872 C, p. 291. (Edestosaurus.)
1872 F, p. 463. (Edestosaurus.)
1872 T, p. 496. (Edestosaurus, Clidastes.)
Merriam, J. C. 1894 A, p. 31.
Nicholson and Lydekker 1889 A, p. 1143.
Owen, R. 1877 A.
Steinmann and Döderlein 1890 A, p. 646.
Williston, S. W. 1891 A.
1898 C.
1897 E.
1897 F.
1897 J, p. 107.
1898 A, figure.
1898 E, p. 195.
Williston and Case 1892 A, p. 17.
Woodward, A. S. 1898 B, p. 195. (Edestosaurus.)
Zittel, K. A. 1890 A, p. 623 (Clidastes); p. 624 (Edestosaurus).

Clidastes cinerearum Cope.

Cope, E. D. 1870 O, p. 583.
1871 D, p. 413.
1871 N, p. 266.
1872 F, pp. 322, 330.
1875 E, pp. 48, 137, 266, pl. xxi, figs. 14-17.
187" G p. 583.

Marsh, O. C. 1871 B, p. 449.
Williston, S. W. 1891 A. (Syn.? of C. velox.)
1898 E, p. 198.
Williston and Case 1892 A, p. 17.
Cretaceous (Niobrara); Kansas.

Clidastes conodon Cope.

Cope, E. D. 1881 R.
Cretaceous; New Jersey.

Clidastes dispar (Marsh).

Marsh, O. C. 1871 B, p. 447. (Edestosaurus.)
Cope, E. D. 1871 N, p. 269. (Edestosaurus.)
1872 F, p. 330. (Edestosaurus.)
1872 CC, p. 141. (Edestosaurus.)
1874 C, p. 33.
1875 E, p. 266.
1877 G, p. 583.
Fürbringer, M. 1900 A, p. 272.
Marsh, O. C. 1872 F, p. 463, pl. xi. (Edestosaurus.)
1880 A, p. 86, pl. i. (Edestosaurus.)
Owen, R. 1880 A, pl. viii, fig. 1. (Edestosaurus.)
Williston, S. W. 1891 A.
1898 E, pp. 198, 201. (C. velox in part; C. tortor in part.)
Williston and Case 1892 A, pp. 17, 30.
Woodward, A. S. 1898 B, p. 193, fig. 117.
Zittel, K. A. 1890 A, p. 617, fig. 549.
Cretaceous (Niobrara); Kansas.

Clidastes iguanavus Cope.

Cope, E. D. 1868 H.
1868 K, p. 233.
1869 A, p. 258.
1869 B, p. 734.
1869 K, p. 86.
1869 M, p. 220, pl. v, fig. 3.
1872 F, p. 330.
1875 E, pp. 138, 266.
Marsh, O. C. 1871 B, p. 449.
Cretaceous; New Jersey.

Clidastes intermedius Leidy.

Leidy, J. 1870 E, p. 4.
Cope, E. D. 1869 M, p. 221.
1871 D, p. 412.
1875 E, pp. 136, 267.
Marsh, O. C. 1871 B, p. 451.
Leidy, J. 1873 B, pp. 281, 344, pl. xxxiv, figs. 1–5.
Cretaceous; Alabama.

Clidastes liodontus Merriam.

Merriam, J. C. 1894 A, p. 35.
Williston, S. W. 1898 E, p. 204.
Cretaceous; Kansas.

Clidastes propython Cope.

Cope, E. D. 1869 D.
1869 A, p. 258.
1869 M, p. 221, pl. xii, figs. 1–21.
1871 B, figs. 15, 19.
1875 E, p. 265, pl. xxxvii, fig. 1.
1878 G, p. 303.
Dana, J. D. 1876 A, p. 65.
Marsh, O. C. 1871 B, p. 451.
Zittel, K. A. 1890 A, p. 623, figs. 545, 547, 548, 553.
Cretaceous; Alabama.

Clidastes pumilis Marsh.

Marsh, O. C. 1871 G, p. 104.
Cope, E. D. 1871 N, p. 266.
1872 F, pp. 323, 330.
1874 C, p. 34.
1875 E, pp. 48, 266.
Marsh, O. C. 1871 B, p. 452.
Merriam, J. C. 1894 A, p. 35.
Williston, S. W. 1898 E, p. 198. (Syn. of C. velox.)
Williston and Case 1892 A, p. 17. (Syn. of C. velox.)
Cretaceous (Niobrara); Kansas.
It seems not improbable that this species will yet prove to be the young of C. velox.

Clidastes rex (Marsh).

Marsh, O. C. 1872 F, p. 460, pl. xii. (Edestosaurus.)
Cope, E. D. 1874 C, p. 33.
1875 E, p. 266.
Marsh, O. C. 1897 C, p. 527. (Edestosaurus.)
Williston, S. W. 1898 E, p. 201. (Syn. of C. tortor.)
Williston and Case 1892 A, pp. 17, 30.
Cretaceous (Niobrara); Kansas.

Clidastes stenops Cope.

Cope, E. D. 1871 N, p. 268. (Edestosaurus.)
1872 F, p. 330. (Edestosaurus.)
1874 C, p. 33.
1875 E, pp. 133, 266, pls. xiv, fig. 2; pl. xvii, figs. 7, 8; pl. xviii, figs. 1–5; pl. xxxvi, fig. 4; pl. xxxvii, figs. 1–3; pl. xxxviii, fig. 3.
1878 G, p. 299.
Marsh, O. C. 1872 F, p. 464. (Edestosaurus.)
Williston, S. W. 1898 E, p. 197.
Williston and Case 1892 A, pp. 17, 30.
Zittel, K. A. 1890 A, p. 613, fig. 541.
Cretaceous (Niobrara); Kansas.

Clidastes tortor Cope.

Cope, E. D. 1871 N, pp. 265, 266. (Edestosaurus.)
1872 F, pp. 322, 330. (Edestosaurus.)
1872 CC, p. 141. (Edestosaurus.)
1874 C, p. 33.
1875 E, pp. 48, 131, 265, pl. xiv, fig. 1; pl. xvi, figs. 1, 6; pl. xvii, fig. 1; pl. xix, figs. 1–6; pl. xxxvi, fig. 3; pl. xxxvii, fig. 2; pl. xxxviii, fig. 2.
1877 G, p. 583.
Marsh, O. C. 1872 F, p. 464. (Edestosaurus.)
Merriam, J. C. 1894 A, p. 34. (C. medius.)
Williston, S. W. 1897 D, p. 97.
1898 E, p. 201, pl. xxiii; pl. xxvii, fig. 2; pl. xxviii, fig. 6; pl. xxix, fig. 2; pl. xxxvii; pl. xxxviii; pl. xxxix; pl. xlii, figs. 5, 6; pl. xlvii; pl. liv, figs. 4, 5; pl. lx, fig. 5; pl. lxiv, fig. 1.
Williston and Case 1892 A, p. 17.
Cretaceous (Niobrara); Kansas.

Clidastes ? validus Cope.

Cope, E. D. 1868 H, p. 181. (Nectoportheus.)
1869 A, p. 260. (Macrosaurus.)
1869 B, p. 734. (Macrosaurus.)
1869 K, p. 86. (Macrosaurus.)
1869 M, p. 208. (Liodon validus, in part); pl. v, fig. 5, (Macrosaurus validus); p. v, expl. of pl. v (Clidastes antivalidus, based on type vertebra of Nectoportheus validus).
1871 D, p. 414. (C. antivalidus.)
Cretaceous; New Jersey.

Clidastes velox (Marsh).

Marsh, O. C. 1871 B, p. 450. (Edestosaurus.)
Ballou, W. H. 1898 A, p. 215, fig. 221.
Cope, E. D. 1871 N, p. 269. (Edestosaurus.)
1872 F, p. 330. (Edestosaurus.)
1874 C, p. 33. (C. affinis, C. velox.)
1875 E, p. 266. (C. velox, C. affinis.)
Leidy, J. 1873 B, pp. 283, 344, pl. xxxiv, figs. 6-11. (C. affinis.)
Marsh, O. C. 1872 F, p. 464. (Edestosaurus.)
Merriam, J. C. 1894 A, p. 34, pl. i, fig. 4; pl. iii, figs. 6, 7, 9, 10.
Williston, S. W. 1891 A.
1893 C, pl. iii.
1897 J, p. 110.
1898 E, pls. x-xii; pl. xxiv, figs. 6, 7; pl. xxvii, figs. 3, 4; pl. xxviii, figs. 1-4; pl. xxxi, fig. 6; pl. xxxiii; pl. xxxiv; pl. xl, figs. 6, 7; pl. lxii, fig. 3; pl. lxxii, fig. 1. (Includes, besides C. velox (Marsh) also C. pumilis Marsh, C. affinis Leidy, and C. dispar (Marsh).
Williston and Case 1892 A, p. 17, pls. ii, iii.
Cretaceous (Niobrara); Kansas.

Clidastes westii Williston and Case.

Williston, S. W. 1892 A, p. 29, pls. iv-vi.
1898 E, p. 205, pl. xxiii; pl. xxvii, fig. 1; pl. xxxv; pl. xxxvi; pl. xxxix; pl. liii.
Cretaceous (Pierre); Kansas.

Clidastes wymani Marsh.

Marsh, O. C. 1871 G, p. 104.
Cope, E. D. 1871 N, p. 266.
1872 F, p. 330.
1874 C, p. 33. (C. vymanii.)
1875 E, p. 266. (C. vymanii.)
Marsh, O. C. 1871 B, p. 451.
1872 F, p. 464. (Edestosaurus.)
Williston, S. W. 1898 E, p. 203.
Williston and Case 1892 A, pp. 17, 30.
Cretaceous (Niobrara); Kansas.

BAPTOSAURUS Marsh. Type *Halisaurus platyspondylus* Marsh.

Marsh, O. C. 1870 F. (To replace Halisaurus, preoccupied by Halosaurus Günther.)
Cope, E. D. 1869 M, pp. 185, 208.
1874 C, p. 31.
1875 E, pp. 128, 272.
Dollo, L. 1885 C, p. 28.
Marsh, O. C. 1869 B, p. 395. (Halisaurus, type *H. platyspondylus*)
Merriam, J. C. 1894 A, p. 36.
Nicholson and Lydekker 1889 A, p. 1142.
Williston, S. W. 1897 F.
1897 H, p. 244.
1897 J, p. 107.
1898 E, p. 207.
Zittel, K. A. 1890 A, p. 624.

The systematic position of this genus is doubtful.

Baptosaurus fraternus Marsh.

Marsh, O. C. 1869 B, p. 397. (Halisaurus.)
Cope, E. D. 1869 M (1870), p. 210.
1875 E, p. 272.
Marsh, O. C. 1870 F.
Cretaceous; New Jersey.

Baptosaurus onchognathus Merriam.

Merriam, J. C. 1894 A, p. 37, pl. iv, fig. 9.
Williston, S. W. 1898 E, p. 208, pl. xxv, fig. 6; pl. xli, fig. 8.
Cretaceous (Niobrara); Kansas.

Baptosaurus platyspondylus Marsh.

Marsh, O. C. 1869 B, p. 395. (Halisaurus.)
Cope, E. D. 1869 M (1870), p. 209.
1875 E, p. 272.
Marsh, O. C. 1869 B, p. 395. (Halisaurus.)
1870 F.
Cretaceous; New Jersey.

This species is said to have been described at the Salem meeting of the Amer. Assoc. Adv. Sci., 1869, under the name ***Macrospondylus platyspondylus***, but the name does not occur in the "Proceedings."

PLATECARPINÆ.

Williston, S. W. 1897 F, pp. 177, 181.
Williston, S. W. 1898 E, pp. 91, 177.

SIRONECTES Cope. Type *S. anguliferus* Cope.

Cope, E. D. 1874 C, pp. 31, 34.
1875 E, pp. 128, 139, 267.
Dollo, L. 1885 C, p. 30.
Nicholson and Lydekker 1889 A, p. 1144.
Williston, S. W. 1897 H, p. 245.
1897 J, p. 107.
Zittel, K. A. 1890 A, p. 624.

Sironectes anguliferus Cope.

Cope, E. D. 1874 C, pp. 31, 34.
1875 E, pp. 139, 267, pl. xxiii, figs. 16-18; pl. xxiv, figs. 1-15.
Williston, S. W. 1898 E, pp. 188, 194. (? Platecarpus planifrons.)
Cretaceous (Niobrara); Kansas.

HOLCODUS Gibbes. Type *H. acutidens* Gibbes.

Gibbes, R. W. 1851 A, p. 9.
Cope, E. D. 1869 M, pp. 185, 199.
1871 N, p. 269.
1872 F, p. 331.
1872 CC, p. 141.
Leidy, J. 1865 A, p. 118. (In part).
Marsh, O. C. 1872 C, p. 291.
1872 F, p. 455, (Syn.? of Mosasaurus.)
Williston, S. W. 1897 F, p. 184. (=? Platecarpus.)
1898 E, p. 178. (=? Platecarpus.)
Zittel, K. A. 1890 A, p. 620. (Syn. of Mosasaurus.)

Holcodus acutidens Gibbes.

Gibbes, R. W. 1851 A, p. 9, pl. iii, figs. 6-9; not fig. 13.
Cope, E. D. 1869 M, pp. 200, 210.
1872 CC, p. 141.
1875 E, p. 270. (Mosasaurus.)
Gibbes, R. W. 1850 A. (H. columbiensis; no description.)
Leidy, J. 1865 A, p. 118 (in part), pl. x, fig. 17.
Marsh, O. C. 1869 B, p. 394.
Williston, S. W. 1898 E, p. 178. (Platecarpus ?)
Zittel, K. A. 1890 A, p. 623.
Cretaceous; Mississippi.

PLATECARPUS Cope. Type *P. tympaniticus* Cope.

Cope, E. D. 1869 A, p. 264.
Most of the authorities named below include in this genus also the species placed in this work in the genus *Lestosaurus* Marsh.
Cope, E. D. 1869 M, pp. 185, 199.
1872 CC, p. 141.
1874 C, pp. 31, 34.
1875 E, pp. 128, 141, 266.
1878 G. (In part).
Leidy, J. 1865 A, p. 118. (Holcodus, in part.)
Lydekker, R. 1888 B, p. 269.
Merriam, J. C. 1894 A.
Nicholson and Lydekker 1889 A, p. 1144.
Owen, R. 1877 A.
Steinmann and Döderlein 1890 A, p. 646.
Thévenin, A. 1896 B.
Williston, S. W. 1891 A.
1897 E.
1898 E.
Woodward, A. S. 1898 B, p. 194.
Zittel, K. A. 1890 A, p. 622.

Platecarpus tympaniticus Cope.

Cope, E. D. 1869 A, p. 265.
1869 M, p. 200.
1874 C, p. 35.
1875 E, p. 267, pl. xxxvii, fig. 11.
Leidy, J. 1865 A, p. 118 (in part), pl. vii, figs. 4-7; pl. xi, fig. 14. (?Holcodus acutidens.)
Williston, S. W. 1897 F, p. 178.
1898 E, p. 179.
Cretaceous; Mississippi.

LESTOSAURUS Marsh. Type *L. simus* Marsh.

Marsh, O. C. 1872 F, p. 454.
Baur, G. 1892 B. (Platecarpus.)
Cope, E. D. 1872 CC, p. 141. (Lestosaurus.)
1874 C, pp. 31, 34. (Platecarpus.)
1875 E, pp. 128, 141, 266 (Platecarpus).
1878 G. (Platecarpus.)
Dollo, L. 1885 C, p. 28 (Lestosaurus); p. 29 (Platecarpus).
Lydekker, R. 1888 B, p. 269. (Platecarpus.)
Marsh, O. C. 1872 T, p. 497.
1880 A, p. 84.
Merriam, J. C. 1894 A. (Platecarpus.)
Nicholson and Lydekker 1889 A, p. 1144. (Platecarpus.
Osborn, H. F. 1899 D. (Platecarpus.)
Owen, R. 1877 A. (Platecarpus.)
Steinmann and Döderlein 1890 A, p. 646. (Platecarpus.)
Williston, S. W. 1891 A. (Platecarpus.)
1897 F. (Platecarpus.)
1897 J, p. 108. (Platecarpus.)
1898 E. (Platecarpus.)
1898 H, p. 235. (Platecarpus.)
1899 A, p. 40. (Platecarpus.)
Zittel, K. A. 1890 A, p. 622 (Platecarpus).

Lestosaurus clidastoides (Merriam).

Merriam, J. C. 1894 A, p. 30. (Platecarpus.)
Williston, S. W. 1898 E, p. 190. (Platecarpus.)
Cretaceous; Kansas.

Lestosaurus coryphæus (Cope).

Cope, E. D. 1871 N, p. 269. (Holcodus.)
Ballou, W. H. 1898 A, pp. 216, 223, figure. (Platecarpus.)
Baur, G. 1892 B, pls. i, ii. (Platecarpus.)
Cope, E. D. 1872 F, pp. 322, 331. (Holcodus.)
1874 C, p. 35. (Platecarpus.)
1875 E, pp. 47, 142, pl. xv, fig. 1; pl. xvi, fig. 3; pl. xvii, fig. 6; pl. xx, figs. 4-7; pl. xxi, figs. 1, 2; pl. xxxvi, fig. 6; pl. xxxvii, fig. 9. (Platecarpus.)
Fürbringer, M. 1900 A, p. 272. (Platecarpus.)
Leidy, J. 1873 B, pp. 276, 344, pl. xxxiv, figs. 12-14; pl. xxxvi, figs. 4-14.
Marsh, O. C. 1872 F, pp. 457, 461. (Edestosaurus.)
Merriam, J. C. 1894 A, p. 29, pl. i, figs. 1, 2; pl. iii, figs. 3-5, 11; pl. iv, figs. 2, 8. (Platecarpus.)
Osborn, H. F. 1899 D, p. 171, text figs. 2, 3. (Platecarpus.)
1900 A, p. 2, fig. 1. (Platecarpus.)

Wagner, G. 1898 A, p. 208. (Platecarpus coryphæus?)
Williston, S. W. 1897 J, p. 110. (Platecarpus.)
1898 E, pp. 103, 145, 149, 153, 160, 186, pls. xiii-xv; pl. xxii, fig. 2; pl. xxiv, figs. 1-5; pl. xxv, figs. 1-5; pl. xxvi; pl. xxvii, fig.; pl. xxviii, fig. 5; pl. xxix, figs. 3-5; pl. xxxi, figs. 1-5; pl, xlii figs. 3, 4; pl. xlvi, figs. 1-4; pl. l; pl. lii; pl. liv. figs. 2, 3; pl. lv; pl. lvi; pl. lvii, figs. 4-10; pl. lviii; pl. lx, fig. 3; pl. lxi, fig. 3; pl. lxiii; pl. lxiv, fig. 2; pl. lxxii, fig. 2. (Platecarpus.)
1899 A, p. 39, pl. xii. (Platecarpus.)
Woodward, A. S. 1898 B, p. 193, fig. 117.
Cretaceous (Niobrara, Pierre?); Kansas.

Lestosaurus crassartus (Cope).

Cope, E. D. 1871 N, p. 278. (Liodon.)
1872 F, p. 332. (Liodon.)
1872 CC, p. 141. (Liodon.)
1874 C, p. 36. (Platecarpus.)
1875 E, pp. 153, 268, pl. xxvi, figs. 4-12. (Platecarpus.)
Marsh, O. C. 1872 F, p. 462. (Liodon.)
Williston, S. W. 1898 E, p. 180, pl. xlv, figs. 3, 4. (Platecarpus?.)
Cretaceous (Pierre); Colorado.

Lestosaurus curtirostris (Cope).

Cope, E. D. 1871 N, p. 273. (Liodon.)
1871 A. (Liodon; no description.)
1872 F, p. 331. (Liodon.)
1872 CC, p. 141. (Liodon.)
1874 C, p. 36. (Platecarpus.)
1875 E, pp. 150, 268, pl. xiv, fig. 3; pl. xv, fig. 3; pl. xvi, figs. 4, 5; pl. xvii, fig. 2; pl. xviii, figs. 7, 8; pl. xxi, figs. 7-13; pl. xxxvi, figs. 1, 5; pl. xxxvii, fig. 10; pl. xxxviii, fig. 1. (Platecarpus.)
Lydekker, R. 1888 B, p. 270, fig. 59. (Platecarpus.)
Marsh, O. C. 1872 F, p. 461. (Lestosaurus.)
Cretaceous (Niobrara); Kansas.

Lestosaurus felix Marsh.

Marsh, O. C. 1872 F, p. 457, pl. xiii.
Cope, E. D. 1874 C, p. 35. (Platecarpus.)
1875 E, p. 267. (Platecarpus.)
Williston, S. W. 1898 E, p. 189. (Platecarpus.)
Cretaceous (Niobrara); Kansas.

Lestosaurus glandiferus (Cope).

Cope, E. D. 1871 N, p. 276. (Liodon.)
1872 F, p. 332. (Liodon.)
1874 C, p. 36. (Platecarpus?)
1875 E, pp. 156, 268, pl. xxvi, figs. 13, 14. (Platecarpus.)
Williston, S. W. 1898 E, p. 182. (Platecarpus.)
Cretaceous (Niobrara, Pierre?); Kansas.

Lestosaurus gracilis Marsh.

Marsh, O. C. 1872 F, p. 460.
Cope, E. D. 1874 C, p. 36. (Platecarpus.)
1875 E, p. 268. (Platecarpus.)
Williston, S. W. 1898 E, p. 187. (Platecarpus.)
Cretaceous (Niobrara); Kansas.

Lestosaurus ictericus (Cope).

Cope, E. D. 1870 Q. (Liodon.)
1870 O, p. 577. (Liodon.)
1871 D, p. 406. (Liodon.)
1871 N, p. 272. (Holcodus.)
1872 F, p. 331. (Holcodus.)
1874 C, p. 35. (Platecarpus.)
1875 E, pp. 144, 267, pl. xiv, fig. 4; pl. xv, fig. 2; pl. xvii, figs. 3, 4; pl. xviii, fig, 6; pl. xix, figs. 7-10; pl. xx, figs. 1-3; pl. xxv, figs. 1-26; pl. xxxvi, fig. 7; pl. xxxvii, fig. 8. (Platecarpus.)
Marsh, O. C. 1872 F, p. 461. (Lestosaurus.)
Merriam, J. C. 1894 A, p. 30. (Platecarpus.)
Williston, S. W. 1898 E, p. 184, pls. xliii, xliv. (Platecarpus.)
Cretaceous (Niobrara); Kansas.

Lestosaurus latifrons Marsh.

Marsh, O. C. 1872 F, p. 458.
Cope, E. D. 1874 C, p. 36. (Platecarpus.)
1875 E, p. 268. (Platecarpus.)
Williston, S. W. 1898 E, p. 189. (Platecarpus.)
Cretaceous (Niobrara); Kansas.

Lestosaurus? latispinus (Cope).

Cope, E. D. 1871 J, p. 169. (Liodon.)
1871 N, p. 276. (Liodon.)
1872 F, p. 332. (Liodon.)
1874 C, p. 38. (Liodon.)
1875 E, pp. 155, 268, pl. xxvi, figs. 1-4. (Platecarpus?.)
Williston, S. W. 1898 E. p. 181. (Platecarpus?.)
Cretaceous (Pierre); Kansas.

Lestosaurus mudgei (Cope).

Cope, E. D. 1870 Q. (Liodon.)
1870 O, p. 581. (Liodon.)
1871 D, p. 405. (Liodon.)
1871 N, p. 273. (Holcodus.)
1872 F, p. 331. (Holcodus.)
1874 C, p. 36. (Platecarpus.)
1875 E, pp. 157, 268, pl. xvi, fig. 2; pl. xvii, fig. 5; pl. xxvi, figs. 2, 3; pl. xxxvii, fig. 7. (Platecarpus.)
Marsh, O. C. 1872 F, p. 463, pl. xiii. (Rhinosaurus.)
Williston, S. W. 1898 E, p. 186. (Platecarpus.)
Cretaceous (Niobrara); Kansas.

Lestosaurus oxyrhinus (Merriam).

Merriam, J. C. 1894 A, p. 30. (Platecarpus.)
Williston, S. W. 1898 E, p. 190. (Platecarpus.)
Cretaceous; Kansas.

Lestosaurus planifrons (Cope).

Cope, E. D. 1874 C, p. 31. (Clidastes.)
1875 E, pp. 135, 265; pl. xxii, figs. 1-7; pl. xxiii, figs. 1-15; pl. xxxv, fig. 16. (Clidastes.)
1878 G, p. 299. (Clidastes.)
Williston, S. W. 1898 E, pp. 188, 194. (Platecarpus.)
Williston and Case 1892 A, p. 17. (Clidastes.)
Cretaceous (Niobrara); Kansas.

Lestosaurus simus Marsh.

Marsh, O. C. 1872 F, p. 455, pls. x, xi.
Cope, E. D. 1874 C, p. 36. (Platecarpus.)
1875 E, p. 268. (Platecarpus.)

Marsh, O. C. 1880 A, p. 86, pl. i.
1897 C, p. 527.
Merriam, J. C. 1894 A, p. 30. (Platecarpus.)
Owen, R. 1880 A, pl. viii, figs. 2, 3.
Williston, S. W. 1898 E, p. 188, pl. xlvii. (Platecarpus.)
Woodward, A. S. 1898 B, p. 193, fig. 117.
Zittel, K. A. 1890 A, p. 622, figs. 550, 552.
Cretaceous (Niobrara); Kansas.

Lestosaurus tectulus (Cope).

Cope, E. D. 1871 N, p. 271. (Holcodus.)
1872 F, p. 331. (Holcodus.)
1874 C, p. 36. (Platecarpus.)
1875 E, pp. 159, 269; pl. xxi, figs. 3–6; pl. xxvii, figs. 5–10. (Platecarpus.)
Williston, S. W. 1898 E, p. 183. (Platecarpus.)
Cretaceous (Pierre); Kansas.

BRACHYSAURUS Willist. Type *B. overtoni* Willist.

Williston, S. W. 1897 D.
1897 F, p. 178.
1897 H, p. 246.
1898 E, p. 192.

Brachysaurus overtoni Willist.

Williston, S. W. 1897 D, p. 96, pl. viii.
1898 E, pp. 148, 192, pl. xxii; pl. xxx; pl. xi, figs. 10, 11; pl. lxii, fig. 1.
Cretaceous (Pierre); Kansas.

HOLOSAURUS Marsh. Type *H. abruptus* Marsh.

Marsh, O. C. 1880 A, p. 87.
Dollo L. 1893 C, p. 221.
Williston, S. W. 1897 H, p. 245. (Syn. of Platecarpus.)
1897 J, p. 107.
1898 E, p. 192.
Zittel, K. A. 1890 A, p. 624.

Holosaurus abruptus Marsh.

Marsh, O. C. 1880 A, p. 87.
1897 C, p. 527.
Williston, S. W. 1898 E, p. 193.
Cretaceous (Niobrara); Kansas.

TYLOSAURINÆ.

Williston, S. W. 1897 F, pp. 177, 180.
Marsh, O. C. 1876 G, p. 59, (Tylosauridæ.)
Williston, S. W. 1895 A, p. 169. (Tylosauridæ.)
1898 E, pp. 90, 171.

MACROSAURUS Owen. Type *M. lævis* Owen.

Owen, R. 1849 A, p. 382.
Cope, E. D. 1869 M, p. 200. (Syn. of Liodon.)
1875 E, p. 270. (Syn. of Liodon.)
Gibbes, R. W. 1851 A, p. 13.
Leidy, J. 1865 A, p. 74.
Zittel, K. A. 1890 A, p. 622. (Syn. of Liodon.)

Macrosaurus lævis Owen.

Owen, R. 1849 A, p. 382, pl. xi, figs. 1–6.
Cope, E. D. 1867 E, p. 26.
1869 A, p. 260.
1869 B, p. 734.
1869 M, pp. 205, in part. (Liodon.)
1875 E, p. 270. (Liodon.)
Leidy, J. 1865 A, pp. 74, 118.
1865 D, p. 70.
Owen, R. 1879 B, p. 54. (Leiodon.)
Cretaceous; New Jersey.

Macrosaurus mitchillii (De Kay).

DeKay, J. E. 1830 A, p. 140, pl. iii, figs. 3, 4. (Geosaurus.)
Cope, E. D, 1869 A, p. 261. (Mosasaurus impar.)
1869 M, pp. 198, 205. (Liodon.)
1871 G, p. 43. (Liodon.)
1875 E, p. 270. (Liodon.)
1875 V, p. 41. (Liodon.)
De Kay, J. E. 1842 A, p. 28, pl. xxii, figs. 55, 56. (Geosaurus.)
Emmons, E. 1858 B, p. 224, figs. 45, 46. (Drepanodon impar.)
Gibbes R. W. 1851 A, p. 9. (Geosaurus.)
Giebel, C. G. 1847 B. p. 134. (Geosaurus.)
Harlan, R. 1834 B, p. 82. (Geosaurus.)
1835 B, p. 285. (Geosaurus.)
Leidy, J. 1856 L, p. 255. (Drepanodon impar.)
1857 A, p. 271. (Drepanodon impar.)
1859 B, p. 10. (Lesticodus impar.)
1859 D, p. 92. (Geosaurus.)
1855 A, p. 65, pl. xi, figs. 1–4, *fide* Cope. (Mosasaurus mitchillii.)
1865 D, p. 70 in part.
Williston, S. W. 1897 F, pp. 182, 183. (Tylosaurus.)
1898 E, p. 172. (Tylosaurus.)
Cretaceous; New Jersey.

TYLOSAURUS Marsh. Type T. *micromus* Marsh.

Marsh, O. C. 1872 H, p. 147. (To replace Rhinosaurus Marsh and Rhamphosaurus Cope, both preoccupied.)

Since the American species assigned to *Tylosaurus* may prove to be congeneric with those called by Owen *Leiodon* and by others *Liodon*, references to literature of the latter title is given. *Leiodon* is, however, preoccupied by Swainson, 1839.

Charlesworth, E. 1846 A. (Liodon.)

Cope, E. D. 1869 M, p. 200. (Liodon.)
1871 D, p. 401. (Liodon.)
1871 N, p. 273. (Liodon.)
1872 F, p. 331. (Liodon.)
1872 CC, p. 141. (Rhamphosaurus, to replace Rhinosaurus.)
1874 C, pp. 31, 36, 37. (Liodon, Nectoportheus.)
1875 E, pp. 128, 160, 271. (Liodon, Nectoportheus.)
1878 G. (Liodon.)
1879 J. (Liodon.)
Dollo, L. 1885 C, pp. 28, 30. (Liodon, Tylosaurus.)
Gaudry, A. 1892 A, p. 2. (Leiodon.)
Leidy, J. 1873 B, p. 343.
Lydekker, R. 1888 B, p. 264. (Liodon.)
Marsh, O. C. 1872 C, p. 291. (Liodon.)
1872 F, pp. 455, 461. (Rhinosaurus, type *R. micromus.*)
1880 A, p. 84.
Merriam, J. C. 1894 A, p. 14,
Nicholson and Lydekker 1889 A, p. 1144.
Osborn, H. F. 1899 D, p. 167.
Owen, R. 1842 A, p. 144. (Leiodon, type *L. anceps* Owen.)
1845 B, p. 261, pl. lxxii. (Leiodon.)
1851 B, p. 41. (Leiodon.)
1879 B. (Leiodon.)
1880 A. (Leiodon.)
Pictet, F. J. 1853 A, p. 507. (Leiodon.)
Snow, F. H. 1878 A, p. 54. (Liodon.)
Steinmann and Döderlein 1890 A, p. 646. (Liodon.)
Williston, S. W. 1891 A. (Liodon.)
1897 E.
1897 F, p. 177.
1897 J, p. 108.
1898 E, p. 171.
Zittel, K. A. 1890 A, p. 622. (Liodon.)

Tylosaurus congrops (Cope).

Cope, E. D. 1869 M, p. 206. (Liodon.)
1870 D, p. 271. (Liodon.)
1875 E, p. 272. (Liodon.)
Cretaceous; Alabama.

Tylosaurus dyspelor (Cope).

Cope, E. D. 1870 Q. (Liodon.)
1870 O, p. 574. (Liodon.)
1871 D, p. 410. (Liodon.)
1871 J, p. 169. (Liodon.)
1871 K, p. 174, (Liodon.)
1871 N, p. 280. (Liodon.)
1872 F, pp. 321, 333. (Liodon.)
1872 CC, p. 141. (Liodon.)
1874 C, p. 38. (Liodon.)
1875 E, pp. 46, 167, 271, pl. xxvii, fig. 11; pl. xxviii, figs. 1-7: pls. xxix-xxxiii; pl. xxx i, fig. 1; pl. xxxvii, fig. 5. (Liodon.)
Gibbes, R. W. 1851 A, p. 6. (Liodon.)
Leidy, J. 1873 B, pp. 271, 343, pl. xxxv, figs, 1-11.
Marsh, O. C. 1872 F, p, 463. (Rhinosaurus.)
1872 T, p. 496. (Liodon.)
Merriam, J. C. 1894 A, p. 23, pl. iv, figs. 3, 4.
Osborn, H. F. 1899 D, p. 167, pls. xxi-xxiii, text figs. 1, 7-9, 11-14.
1899 F, p. 913.
Snow, F. H. 1878 A, p. 54. (Liodon.)
Williston, S. W. 1898 F, p. 145 *et seq.*, pl. xliii, figs. 1, 2; pl. xlvi, fig. 4; pl. lix; pl. lxi, figs. 1, 2.
1897 J, p. 110.
Cretaceous (Niobrara); New Mexico, Kansas.

Tylosaurus laticaudus (Marsh).

Marsh, O. C. 1870 F. (Liodon.)
Cretaceous; New Jersey.

Tylosaurus micromus Marsh.

Marsh, O. C. 1872 F, p. 461, pl. xiii. (Rhinosaurus.)
Cope, E. D. 1874 C, p. 36. (Liodon.)
1875 E, p. 271. (Liodon.)
Marsh, O. C. 1880 A, p. 85, fig. 1.
Merriam, J. C. 1894 A, p. 23, pl. i, fig. 3; pl. iii, fig. 8.
Williston, S. W. 1898 E, p. 175.
Cretaceous (Niobrara); Kansas.

Tylosaurus nepæolicus (Cope).

Cope, E. D. 1874 C, p. 37. (Liodon, Rhamphosaurus.)
1875 E, pp. 177, 271, pl. xxxv, figs. 11-15. (Liodon.)
Williston, S. W. 1898 E, p. 176.
Cretaceous (Niobrara); Kansas.

Tylosaurus perlatus (Cope).

Cope, E. D. 1869 M (1870), p. ii of Errata and Addenda (Liodon); p. 198 ("Mosasaurus brumbyi").
1870 J, p. 497. (Liodon.)
1875 E, p. 271. (Liodon.)
Lydekker, R. 1888 B, p. 267. (Liodon.)
Cretaceous; Alabama.

Tylosaurus proriger (Cope).

Cope, E. D. 1869 H, p. 123. (Macrosaurus.)
Ballou, W. H. 1898 A, pp. 217, 224, figure.
Cope, E. D. 1869 M, p. 202, pl. xii, figs. 22-24. (Liodon.)
1871 A. (Liodon.)
1871 D, p. 401. (Liodon.)
1871 K, p. 175. (Liodon.)
1871 N, p. 271. (Liodon.)
1872 F, pp. 321, 333. (Liodon.)
1872 CC, p. 141. (Rhamphosaurus, provisionally.)
1874 C, p. 38. (Liodon.)
1875 E, pp. 46, 161, 271, pl. xxviii, figs. 8, 9; pl. xxx, figs. 10-14; pl. xxxvi, fig. 2; pl. xxxvii, fig. 6. (Liodon.)
Leidy, J. 1870 E, p. 4. (Liodon.)
1873 B, pp. 274, 344, pl. xxxv, fig. 13; pl. xxxvi, figs. 1-3.
Marsh, O. C. 1872 F, p. 463. (Rhinosaurus.)
Merriam, J. C. 1894 A, p. 23, pl. ii; pl. iii, figs. 1, 2.
Osborn, H. F. 1899 D, p. 169.
Williston, S. W. 1897 E, p. 102, pls. ix, x.
1897 F, pl. xx.
1897 J, p. 110.
1898 E, p. 173, pls. xvi-xviii; pl. xxix, fig. 1; pl. xl, figs. 1-7; pl. xli, fig. 1; pl. xlviii, fig. 7; pl. lv; pl. lx, figs. 1, 2; pls. lxv-lxx; pl. lxxii, fig. 3.
Cretaceous (Niobrara); Kansas.

Tylosaurus rapax sp. nov.

Cope, E. D. 1869 M, p. 187, text fig. 48^{5}; p. 188, text fig. 49^{4}; pp. 201, 207. (Liodon validus; not Nectoportheus validus Cope, 1868.)
1870 D, p. 272. (Liodon validus.)
1875 E, p. 271, pl. xxxvii, fig. 4. (Liodon validus.)
Leidy, J. 1865 A, p. 74, in part, pl. iii, figs. 1-2; pl. vii, figs. 19, 20. (Macrosaurus lævis.)
Cretaceous; New Jersey.

Tylosaurus sectorius (Cope).

Cope, E. D. 1871 G, p. 41. (Liodon.)
1875 E, p. 271. (Liodon.)
Cretaceous; New Jersey.

DIPLOTOMODON Leidy. Type *D. horrificus* Leidy.

Leidy, J. 1868 G, p. 202. (To replace Tomodon, preoccupied.)
Cope, E. D. 1868 C, p. 417. (Tomodon.)
1875 E, p. 272.
Leidy, J. 1865 A, p. 102. (Tomodon, type *T. horrificus;* not Tomodon Duméril, 1853.)
Zittel, K. A. 1890 A, pp. 624, 727.

Diplotomodon horrificus Leidy.

Leidy, J. 1865 A, pp. 102, 119, pl. xx, figs. 7-9. (Tomodon.)
Cope, E. D. 1875 E, p. 272.
Leidy, J. 1865 D, p. 72. (Tomodon.)
1868 G, p. 202.
Cretaceous; New Jersey.

ELLIPTONODON Emmons. Type *E. compressus* Emmons.

Emmons, E. 1858 B, p. 222.
A genus whose value and systematic position are doubtful.

Elliptonodon compressus Emmons.

Emmons, E. 1858 B, p. 222, figs. 41, 42.
Cope, E. D. 1869 M, p. 186.
Leidy, J. 1865 A, pp. 63, 117.
Cretaceous; North Carolina.

POLYGONODON Leidy. Type *P. vetus* Leidy.

Leidy, J. 1856 K, p. 221.
Cope, E. D. 1869 M, pp. 185, 210.
A genus of uncertain ordinal position.

Polygonodon rectus Emmons.

Emmons, E. 1858 B, p. 218 (Mosasaurus); fig. 37 A (Polygonodon).
Cope, E. D. 1869 M, p. 211.
1875 V, p. 41.
Emmons, E. 1860 A, p. 208, fig. 180^{2}.
Leidy, J. 1865 A, pp. 76, 118. (Syn. of P. vetus.)
Miocene; North Carolina.

Polygonodon vetus Leidy.

Leidy, J. 1856 K, p. 221.
Cope, E. D. 1869 B, p. 734.
1869 M, p. 210.
1875 E, p. 280.
Leidy, J. 1865 A, pp. 76, 118, pl. ix, figs. 12, 13.
1865 D, p. 70.
Cretaceous; New Jersey.

Suborder SAURIA Macartney.

Macartney, J., 1802, Lectures on Comp. Anat., i, tab. 3.
Unless otherwise indicated, the following authors use the term *Lacertilia* for this order.
Baur, G. 1885 E, p. 634.
1887 C, p. 99.
1895 A.
1895 D.
1896 A.
Born, G. 1876 A. ("Saurier.")
1880 A, p. 63. ("Saurier.")
Boulenger, G. A. 1884 A.
1885 A.
1887 A.
1891 A.
1893 A, p. 1.
1895 A.
Burckhardt, C. K. 1895 A.
Calori, L. 1894 A.
Cope, E. D. 1864 A.
1869 M, p. 28.
1871 B.
1878 G, p. 300.
1882 J, p. 981.
1887 S, p. 334.
1891 N, pp. 45, 47.
1892 F.
1892 Z, p. 19.
1895 C, p. 857.
1895 D.
1896 A.
1896 B.
1898 B, p. 74.
Cuvier, G. 1834 A, x, pp. 1-98.
Dollo, L. 1885 B.
Fürbringer, M. 1900 A, pp. 231, 537, 605, 620.
Gadow, H. 1896 A, p. 29.
1898 A. p. 24. (Sauria.)
Gaupp, E. 1894 A.
1895 B.
1898 A, p. 302.
1900 A.

Gegenbaur, C, 1864 A.
1865 B, p. 40.
1898 A.
Gill, T. 1900 A, p. 730.
Gorski, C. 1858 A.
Günther, A. 1886 A, p. 444.
Haeckel, E. 1895 A. p. 344.
Hoffmann, C. K. 1876 A.
1878 A.
1879 A, p. 99.
1890 B. (Saurii.)
Huxley, T. H. 1870 A.
1872 A, p. 186.
1876 B, xiii, p. 429.
Leidy, J. 1871 C, p. 368.
Levy, H. 1898 A.
Lydekker, R. 1888 B, p. 275.
Marsh, O. C. 1877 E.
Mivart, St. G. 1886 A, p. 448.
Müller, J. 1831 A, p. 238. (Lacertina.)
Nicholson and Lydekker 1889 A, p. 1138.
Osborn, H. F. 1900 A, p. 1
Owen, R. 1842 A, p. 144.
1860 A, p. 165.
1866 A.
1877 A.
Parker, W. K. 168 A, p. 100.
1879 B, p. 63.
1880 A.
Rathke, H. 1858 A. ("Saurier.")
Segond, L. A. 1873 A, p. 14. ("Lézard.")
Siebenrock, F. 1892 A.
1893 A.
1894 A.
1895 A.
1895 B.
Stannius, H. 1856 A. (Sauria.)
Steinmann and Döderlein 1890 A, p. 644.
Tomes, C. S. 1898 A. p. 270. ("Saurians.")
Wiedersheim, R. 1889 A, p. 438.
Zittel, K. A. 1890 A, pp. 450, 602.

IGUANIDÆ.

Gray, J. E., 1827, Philos. Mag. (2), ii, p. 127.
Boulenger, G. A. 1884 A, p. 119.
1885 A, p. 1.
Cope, E. D. 1864 A, p. 227. (Anolidæ, Iguanidæ.)
1900 A, p. 220.
Gadow, H. 1898 A. p. 25.
Hoffmann, C. K. 1890 B, p. 1217.
Lydekker, R. 1888 B, p. 277.
Parker, W. K. 1868 A, p. 107. (Iguana.)
Siebenrock, F. 1895 B. (On Agamidæ.)
Stannius, H. 1856 A. (Iguanoidea.)
Zittel, K. A. 1890 A, p. 607.

IGUANAVUS Marsh. Type *I. exilis* Marsh.

Marsh, O. C. 1872 K, p. 309.
Nicholson and Lydekker 1889 A, p. 1140.
King, C. 1878 A, p. 405.
Eocene (Bridger); Wyoming.

Iguanavus exilis Marsh.

Marsh, O. C. 1872 K, p. 309.

Iguanavus teres Marsh.

Marsh, O. C. 1892 E, p. 451.
Cretaceous (Laramie); Wyoming.

CHAMOPS Marsh. Type *C. segnis* Marsh.

Marsh, O. C. 1892 E., p. 450.
Provisionally assigned to the *Iguanidæ*.

Chamops segnis Marsh.

Marsh, O. C. 1892 E, p. 450, figs. 2, 3.
Cretaceous (Laramie); Wyoming.

ANGUIDÆ.

Cope, E. D. 1864 A. pp. 227, 228. (Anguidæ, Gerrhonotidæ.)
Boulenger, G. A. 1884 A, p. 121.
1885 A, ii, p. 265.
Cope, E. D. 1877 K, p. 42. (Placosauridæ.)
1882 J, p. 981. (Placosauridæ.)
1884 O, p. 772. (Gerrhonotidæ.)
1900 A, p. 488.
Gadow, H. 1898 A. p. 25.
Gaupp, E. 1898 A. (Anguis.)
Hoffmann, C. K. 1890 B. (Anguis.)
Lydekker, R. 1888 B, p. 278.
Marsh, O. C. 1877 E, p. 222. (Glyptosauridæ.)
Nicholson and Lydekker 1889 A, p. 1140.
Parker, W. K. 1868 A, p. 98.
Siebenrock, F. 1892 A.
1895 A.
Zittel, K. A. 1890 A, p. 607.

PLACOSAURUS Gervais. Type *P. rugosus* Gervais.

Gervais, P., 1852, Zool. Paléont. France, ed. i, p. 260.
Lydekker, R. 1888 C, p. 110.
Nicholson and Lydekker 1889 A, p. 1140.
Pictet, Gaudin, and Harpe 1857 A, p. 93.
Zittel, K. A. 1890 A, p. 608.

Placosaurus ? sp. indet.

Cope, E. D. 1877 K, p. 42, pl. xxxii, figs. 26-36.
Eocene; New Mexico.
The fossil fragments above described Professor Cope referred with doubt to the Placosauridæ.

GLYPTOSAURUS Marsh. Type *G. sylvestris* Marsh.

Marsh, O. C. 1871 B, p. 456.
Boulenger, G. A. 1891 A, p. 117.
Cope, E. D. 1875 C, p. 34.
Leidy, J. 1872 B, p. 371.
1873 B, p. 182.
Marsh, O. C. 1871 G, p. 105.
1872 K, p. 302.
Nicholson and Lydekker 1889 A, p. 1141.
Zittel, K. A. 1890 A, p. 608.

Glyptosaurus anceps Marsh.

Marsh, O. C. 1871 B, p. 458.
1871 G, p. 105.
Eocene (Bridger); Wyoming.

Glyptosaurus brevidens Marsh.

Marsh, O. C. 1872 K, p. 305.
Eocene (Bridger); Wyoming.

Glyptosaurus nodosus Marsh.

Marsh, O. C. 1871 B, p. 458.
1871 G, p. 105.
Eocene (Bridger); Wyoming.

Glyptosaurus ocellatus Marsh.

Marsh, O. C. 1871 B, p. 458.
? Leidy, J. 1873 B, p. 183, pl. xvi, figs. 13–17.
Marsh, O. C. 1871 G, p. 105.
1872 K, p. 306.
Eocene (Bridger); Wyoming.

Glyptosaurus princeps Marsh.

Marsh, O. C. 1872 K, p. 302.
King, C. 1878 A, p. 405.
Eocene (Bridger); Wyoming.

Glyptosaurus rugosus Marsh.

Marsh, O. C. 1872 K, p. 305.
Eocene (Bridger); Wyoming.

Glyptosaurus sphenodon Marsh.

Marsh, O. C. 1872 K, p. 306.
Eocene (Bridger); Wyoming.

Glyptosaurus sylvestris Marsh.

Marsh, O. C.. 1871 B, p. 456.
1871 G, p. 105.
Eocene (Bridger); Wyoming.

XESTOPS Cope. Type *Oreosaurus vagans* Marsh.

Cope, E. D. 1873 CC, p. 19. (To replace Oreosaurus Marsh, preoccupied.)
Marsh, O. C. 1872 K, p. 303. (Oreosaurus, type *O. vagans*; not Oreosaurus Peters, 1862.)
Nicholson and Lydekker 1889 A, p. 1141.
Zittel, K. A. 1890 A, p. 608.

Xestops gracilis (Marsh).

Marsh, O. C. 1872 K, p. 307. (Oreosaurus.)
Eocene (Bridger); Wyoming.

Xestops lentus (Marsh).

Marsh, O. C. 1872 K, p. 307. (Oreosaurus.)
King, C. 1878 A, p. 405.
Eocene (Bridger); Wyoming.

Xestops microdus (Marsh).

Marsh, O. C. 1872 K, p. 306. (Oreosaurus.)
Eocene (Bridger); Wyoming.

Xestops minutus (Marsh).

Marsh, O. C. 1872 K, p. 308. (Oreosaurus.)
Eocene (Bridger); Wyoming.

Xestops vagans (Marsh).

Marsh, O. C. 1872 K, p. 308. (Oreosaurus.)
Eocene (Bridger); Wyoming.

SANIWA Leidy. Type *S. ensidens* Leidy.

Leidy, J. 1870 S, p. 124.
1871 C, p. 368.
1872 B, p. 370.
1873 B, p. 181. (Saniva.)
Marsh, O. C. 1872 K, p. 299.
Nicholson and Lydekker 1889 A, p. 1141. (Saniva.)
Zittel, K. A. 1890 A, p. 608. (Saniva.)

Saniwa ensidens Leidy.

Leidy, J. 1870 S, p. 124.
Cope, E. D. 1873 E, p. 632. (Saniva.)
King, C. 1878 A, p. 405.
Leidy, J. 1871 C, p. 368.
1872 B, p. 370.
1873 B, pp. 181, 344, pl. xv, fig. 15; pl. xxvii, fig. 35. (Saniva.)
Marsh, O. C. 1871 B, p. 457. (Saniva.)
Eocene (Bridger); Wyoming.

Saniwa major Leidy.

Leidy, J. 1873 B, pp. 182, 345, pl. xv, fig. 14; pl. xxvii, figs. 36, 37. (Saniva.)
Eocene (Bridger); Wyoming.

PELTOSAURUS Cope. Type *P. granulosus* Cope.

Cope, E. D. 1873 S, p. 5.
1873 CC, p. 19.
1874 B, p. 512.
1884 O, p. 771.
Hoffmann, C. K. 1890 B, p. 1324.
Nicholson and Lydekker 1889 A, p. 1140.
Zittel, K. A. 1890 A, p. 608.

Peltosaurus granulosus Cope.

Cope, E. D. 1873 S, p. 5.
1873 CC, p. 19.
1874 B, p. 513.
1874 H.
1884 O, p. 773, pl. lx, figs. 3–11.
Miocene; Colorado.

EXOSTINUS Cope. Type *E. serratus* Cope.

Cope, E. D. 1873 CC, pp. 16, 19.
1874 B, p. 513.
1884 O, p. 775.
Nicholson and Lydekker 1889 A, p. 1140.
Zittel, K. A. 1890 A, p. 610.

Exostinus serratus Cope.

Cope, E. D. 1873 CC, p. 16.
1874 B, p. 514.
1884 O, p. 776, pl. lx, figs. 12-14.
Oligocene (White River); Colorado.

VARANIDÆ.

Cope, E. D. 1864 A, p. 227.
Baur, G. 1890 A, p. 292.
Beddard, F. E. 1888 A.
Boulenger, G. A. 1884 A, p. 122.
1885 A, p. 303.
1891 A, p. 117.
Cope, E. D. 1878 G, p. 305.
1900 A, p. 470.
Dollo, L. 1893 C, p. 252.
Fürbringer, M. 1900 A.
Gadow, H. 1898 A, p. 26.
Hoffmann, C. K. 1900 B, p. 1068. (Monitoridæ.)
Lydekker, R. 1888 B, p. 281.
Parker, W. K. 1868 A, p. 116. (Monitor,)
Stannius, H. 1856 A. (Varani.)
Zittel, K. A. 1890 A, p. 608.

THINOSAURUS Marsh. Type *T. paucidens* Marsh.

Marsh, O. C. 1872 K, p. 299.
Boulenger, G. A. 1891 A, p. 115.
Hoffmann, C. K. 1890 B, p. 1324.
Zittel, K. A. 1890 A, p. 609.

Thinosaurus agilis Marsh.

Marsh, O. C. 1872 K, p. 302.
Eocene (Bridger); Wyoming.

Thinosaurus crassus Marsh.

Marsh, O. C. 1892 K, p. 301.
Eocene (Bridger); Wyoming.

Thinosaurus grandis Marsh.

Marsh, O. C. 1872 K, p. 301.
Eocene (Bridger); Wyoming.

Thinosaurus leptodus Marsh.

Marsh, O. C. 1872 K, p. 300.
Cope, E. D. 1873 E, p. 632.
King, C. 1878 A, p. 405.
Eocene (Bridger); Wyoming.

Thinosaurus paucidens Marsh.

Marsh, O. C. 1872 K, p. 299.
Eocene (Bridger); Wyoming.

TINOSAURUS Marsh. Type *T. stenodon* Marsh.

Marsh, O. C. 1872 K, p. 304.
Zittel, K. A. 1890 A, p. 609.
The position of this genus is uncertain.

Tinosaurus lepidus Marsh.

Marsh, O. C. 1872 K, p. 308.
Eocene (Bridger); Wyoming.

Tinosaurus stenodon Marsh.

Marsh, O. C. 1872 K, p. 304.
Eocene (Bridger); Wyoming.

AMPHISBÆNIDÆ.

Gray, J. E., 1825, Philos. Mag. (2), x.
Baur, G. 1893 C. (Amphisbænidæ; Hypsorhinidæ.)
Boulenger, G. A. 1884 A.
1885 A, p. 430.
Cope, E. D. 1864 A, p. 226. (Amphisbænia.)
1871 B.
1900 A, p. 682.
Fürbringer, M. 1900 A, pp. 258, 539, 616, 622. (Amphisbænia; Amphisbænidæ.)
Gadow, 1898 A, p. 27.
Gervais, P. 1853 A, p. 293. ("Amphisbènes.")
Haeckel, E. 1895 A, p. 349. (Glyptoderma.)
Hoffmann, C. K. 1890 B, p. 1288.
Müller, J. 1831 A, p. 253. (Amphisbænoidea).
Owen, R. 1845 B, p. 334. (Amphisbænæ.)
Parker, W. K. 1868 A, p. 95. (Amphisbenæ.)
Stannius, H. 1856 A. (Amphisbænoida.)

RHINEÜRA Cope. Type *R. floridana* Cope.

Cope, E. D., 1861, Proc. Acad. Nat. Sci. Phila., p. 75.
Boulenger, G. A. 1885 A, p. 459.
Cope, E. D. 1900 A, p. 684.
Fürbringer, M. 1900 A, p. 265.

Rhineüra hatcherii Baur.

Baur, G. 1893 C.
Oligocene (White River); South Dakota.

HYPSORHINA Baur. Type *H. antiqua* Baur.

Baur, *G.* 1898 C.

Hypsorhina antiqua Baur.
Baur, *G.* 1898 C.
Oligocene (White River); South Dakota.

TYLOSTEUS Leidy. Type *T. ornatus* Leidy.

Leidy, *J.* 1872 E, p. 40.
1873 B, p. 285.

The position of this fossil is doubtful. It is not improbably a portion of the dermal armor of some Dinosaur.

Tylosteus ornatus Leidy.
Leidy, *J.* 1872 E, p. 40.
1873 B, pp. 285, 345. pl. xix, fig. 14: fig. 18?.
Cretaceous?; Montana? (Head of Missouri River.)

ACIPRION Cope. Type *A. formosum* Cope.

Cope, *E. D.* 1873 CC, p. 17.
1874 B, p. 514.
1884 O, p. 776.

Aciprion formosum Cope.
Cope, *E. D.* 1873 CC, p. 17.
1874 B, p. 514.
1884 O, p. 776, pl. lx, fig. 15.
Oligocene (White River); South Dakota.

DIACIUM Cope. Type *D. quinquepedale* Cope.

Cope, *E. D.* 1873 CC, p. 17.
1874 B, p. 514.
1884 O, p. 777.

Diacium quinquepedale Cope.
Cope, *E. D.* 1873 CC, p. 17.
1874 B, p. 514.
1884 O, p. 777, pl. lx, fig. 20.
Oligocene (White River); Colorado.

CREMASTOSAURUS Cope. Type *C. carinicollis* Cope.

Cope, *E. D.* 1873 CC, p. 18.
1874 B, p. 515.
1884 O, p. 780.

Cremastosaurus carinicollis Cope.
Cope, *E. D.* 1873 CC, p. 18.
1874 B, p. 515. (In part.)
1884 O, pp. 779, 781, pl. lx, fig. 16.
Oligocene (White River); Colorado.

PLATYRHACHIS Cope. Type *P. coloradoensis* Cope.

Cope, *E. D.* 1873 CC, p. 19.
1874 B, p. 516.
1884 O, p. 777.

Platyrhachis coloradoensis Cope.
Cope, *E. D.* 1873 CC, p. 19.
1874 B, p. 516.
1884 O, p. 778, pl. lx, fig. 17.
Oligocene (White River); Colorado.

Platyrhachis rhambastes Cope.
Cope, *E. D.* 1884 O, p. 779, pl. lx, fig 18.
1874 B, p. 516. (Cremastosaurus carinicollis, in part.)
Oligocene (White River); Colorado.

Platyrhachis unipedalis Cope.
Cope, *E. D.* 1873 CC, p. 18. (Diacium.)
1874 B, p. 516. (Cremastosaurus.)
1884 O, p. 779, pl. lx, fig. 19.
Oligocene (White River); Colorado.

NAOCEPHALUS Cope. Type *N. porrectus* Cope.

Cope, *E. D.* 1872 M, p. 465.
1873 E, p. 631.

A genus of uncertain affinities.

Naocephalus porrectus Cope.
Cope, *E. D.* 1872 M, p. 465.
1873 E, p. 632.
Eocene (Bridger); Wyoming.

Suborder Rhiptoglossi Wiegmann.

Wiegmann, A. F. A., 1834, Herp. Mex., p. 13.
Boulenger, G. A. 1884 A, p. 120. (Rhiptoglossa.)
1887 A, p. 437. (Rhiptoglossa.)
1891 A, p. 117. (Rhiptoglossa.)
Cope, E. D. 1864 A. (Rhiptoglossa.)
1895 C, p. 859. (Rhiptoglossa.)
1900 A, p. 208. (Rhiptoglossa.)
Dollo, L. 1893 C, p. 259.
Fürbringer, M. 1900 A, pp. 265, 586, 619, 622. (Chamæleontina.)
Gadow, H. 1898 A, p. 27. (Chamæleontes.)
Haeckel, E. 1895 A, p. 348. (Chamæleontes.)
Nicholson and Lydekker 1889 A, p. 1142. (Rhiptoglossa.)
Tomes, C. S. 1898 A, p. 272. ("Chamæleons.")
Stannius, H. 1856 A. (Chamæleonidea.)

CHAMÆLEONIDÆ.

Gray, J. E. 1825, Ann. Philos. (2), x, p. 200.
Boulenger, G. A. 1884 A, p. 120.
1887 A, p. 437.
Cope, E. D. 1895 C, p. 859.
Cope, E. D. 1900 A, p. 209.
Hoffmann, C. K. 1890 B, p. 1280.
Nicholson and Lydekker 1889 A, p. 1142.
Siebenrock, F. 1893 B.

Chamæleo Laurenti.

Laurenti, J. N., 1768, Syn. Rept., p. 45.
Born, G. 1876 A, p. 21.
Boulenger, G. A. 1887 A, p. 438. (Chamæleon.)
Cope, E. D. 1900 A, p. 211. (Chamæleon.)
Deslongchamps-Eudes, J. A. 1838 A, p. 96. ("Caméléon.")
Fürbringer, M. 1900 A.
Hoffmann, C. K. 1890 B, pp. 450, 1280.
Parker, W. K. 1868 A, p. 122.
Rathke, H. 1853 A, p. 25.
Siebenrock, F. 1893 B.
Stecker, A. 1877 A. (Chamæleon.)

Chamæleo pristinus Leidy.

Leidy, J. 1872 J, p. 277.
1873 B, pp. 184, 345, pl. xxvii, figs. 38, 39.
Eocene; Wyoming.

Suborder Serpentes Linn.

Linnæus, C., 1758, Syst. Nat., ed. x, p. 194.

The following authorities, unless otherwise indicated, refer to this group under the name *Ophidia*.

Baur, G. 1887 C, p. 99.
1895 A.
1896 A.
Boulenger, G. A. 1893 A.
1895 A.
1896 A.
1896 C.
Calori, L. 1894 A.
Cope, E. D. 1864 A.
1871 B.
1878 G, p. 300.
1882 J, p. 981.
1886 V.
1887 S, p. 334.
1891 N, pp. 45, 50.
1892 Z, p, 20.
1895 C, p. 857.
1895 D.
1896 A.
1896 B.
1898 B, p. 75 (Serpentes); p. 79 (Ophidia).
Fürbringer, M. 1900 A.
Gadow, H. 1889 A, p. 471.
Gadow, H. 1898 A, p. 28.
Gill, T. 1900 A, p. 780.
Günther, A. C. 1886 A, p. 445.
Haeckel, E. 1895 A, p. 353. (Serpentes.)
Hoffmann, C. K. 1890 C.
Huxley, T. H. 1872 A, p. 200.
Levy, H. 1900 A.
Lydekker, R. 1888 B, p. 249.
Marsh, O. C. 1877 E.
Müller, J. 1831 A, p. 268.
Nicholson and Lydekker 1889 A, p. 1146.
Owen, R. 1845 B, p. 219.
1850 A, p. 51.
1860 A, p. 166.
1866 A.
1877 A.
Parker, W. K. 1879 A.
1879 B.
Pictet, F. J. 1853 A, p. 555. ("Ophidiens.")
Rochebrune, A. T. 1881 A.
Segond, L. A. 1873 A, p. 17. ("Serpent.")
Stannius, H. 1856 A.
Steinmann and Döderlein 1890 A, p. 646.
Tomes, C, S. 1895 A, p. 273.
Walter, F. 1887 A.
Zittel, K. A. 1890 A, pp. 450, 624.

PALÆOPHIDÆ.

Lydekker, R. 1888 C, p. 113.
1888 B, p. 256.
Nicholson and Lydekker 1889 A, p. 1147.

PALÆOPHIS Owen. Type *P. toliapicus* Owen.

Owen, R. 1840 G, p. 165.
Cope, E. D. 1868 K, p. 234.
1869 M, pp. 227, 299.
Lydekker, R. 1888 C, p. 112.
1888 B, p. 256.
Marsh, O. C. 1869 C, p. 400. (Dinophis, type *Palæophis littoralis* Cope.)
1871 A, p. 323. (Dinophis.)
1877 E, p. 223. (Titanophis, to replace Dinophis, preoccupied.)
Nicholson and Lydekker 1889 A, p. 1148.
Owen, R. 1841 B, p. 209.
1842 A, p. 150.
1850 A, p. 56.
Pictet, F. J. 1853 A, p. 556.
Rochebrune, A. T. 1880 A, p. 274.
Zittel, K. A. 1890 A, p. 628. (Palæophis, Titanophis.)

Palæophis grandis (Marsh).

Marsh, O. C. 1869 C. (Dinophis.)
Cope, E. D. 1869 M, p. 228.
1872 Y, p. 14.
Eocene; New Jersey.

Palæophis halidanus Cope.

Cope, E. D. 1868 K, p. 234.
1869 B, p. 738.
1869 M, p. 227, pl. v, fig. 2.
1872 Y, p. 14.
1882 J, p. 981, fig. 2.
Marsh, O. C. 1869 C, p. 400. (Dinophis.)
Eocene; New Jersey.

Palæophis littoralis Cope.

Cope, E. D. 1868 F.
1868 K, p. 234.
1869 B, p. 737.
1869 M, p. 227, pl. v, fig. 1.
1872 Y, p. 14.
1882 J, p. 981, fig. 1.
Marsh, O. C. 1869 C, p. 400. (Dinophis.)
Eocene; New Jersey.

PTEROSPHENUS Lucas. Type *P. schucherti* Lucas.

Lucas, F. A. 1898 B.

Pterosphenus schucherti Lucas.

Lucas, F. A. 1898 B, p. 637, pls. xlv, xlvi.
Schuchert, C. 1900 A, p. 328.
Eocene (Jackson); Alabama.

BOIDÆ.

Gray, J. E. 1842, Zool. Miscell., p. 41. (In part.)
Boulenger, G. A. 1893 A, p. 71.
Cope, E. D. 1864 A, p. 230. (Pythonidæ, Boidæ.)
1886 V, pp. 479, 484.
1900 A, p. 721.
Gadow, H. 1898 A, p. 28.
Hoffmann, C. K. 1890 C, p. 1753. (Boaidæ.)
Rochebrune, A. T. 1881 A, p. 201. ("Aprotérodontiens.")
Segond, L. A. 1873 A, p. 17. ("Python.")
Stannius, H. 1856 A. (Peropoda.)
Tomes, C. S. 1898 A, p. 373. ("Pythons.")
Zittel, K. A. 1890 A, p. 629. (Boæidæ.)

BOAVUS Marsh. Type *B. occidentalis* Marsh.

Marsh, O. C. 1871 A, p. 322.
Cope, E. D. 1884 O, p. 103.
Nicholson and Lydekker 1889 A, p. 1147.
Zittel, K. A. 1890 A, p. 629.

Boavus agilis Marsh.

Marsh, O. C. 1871 A, p. 324.
King, C. 1878 A, p. 405.
Eocene (Bridger); Wyoming.

Boavus brevis Marsh.

Marsh, O. C. 1871 A, p. 324.
King, C. 1878 A, p. 405.
Eocene (Bridger); Wyoming.

Boavus occidentalis Marsh.

Marsh, O. C. 1871 A, p. 323.
King, C. 1878 A, p. 405.
Eocene (Bridger); Wyoming.

PROTAGRAS Cope. Type *P. lacustris* Cope.

Cope, E. D. 1872 E, p. 471.
1884 O, p. 102.
Nicholson and Lydekker 1889 A, p. 1147.
Zittel, K. A. 1890 A, p. 629. (Syn. ? of Boavus Marsh.)

Protagras lacustris Cope.

Cope, E. D. 1872 E, p. 471.
1873 E, p. 632.
1884 O, p. 103, pl. xxiii, figs. 17, 18.
Eocene (Bridger); Wyoming.

LITHOPHIS Marsh. Type *L. sargenti* Marsh.

Marsh, O. C. 1871 A, p. 325.
Nicholson and Lydekker 1889 A, p. 1147.

Lithophis sargenti Marsh.

Marsh, O. C. 1871 A, p. 325.
King, C. 1878 A, p. 405.
Eocene (Bridger); Wyoming.

LESTOPHIS Marsh. Type *L. crassus* Marsh.

Marsh, O. C. 1885 A, p. 326. (To replace Limnophis, preoccupied.)
1871 A, p. 326. (Limnophis.)
Nicholson and Lydekker 1889 A, p. 1147.

Lestophis crassus Marsh.

Marsh, O. C. 1871 A, p. 328. (Limnophis.)
King, C. 1878 A, p. 405. (Limnophis.)
Marsh, O. C. 1885 A.
Eocene (Bridger); Wyoming.

APHELOPHIS Cope. Type *A. talpivorus* Cope.

Cope, E. D. 1873 CC, p. 16.
1874 B, p. 518.
1884 O, p. 781.
Nicholson and Lydekker 1889 A, p. 1147.
Zittel, K. A. 1890 A, p. 630.

Aphelophis talpivorus Cope.

Cope, E. D. 1873 CC, p. 16.
1874 B, p. 518.
1884 O, p. 782, pl. lx, fig. 21.
Oligocene (White River); Colorado.

CALAMAGRAS Cope. Type *C. murivorus* Cope.

Cope, E. D. 1873 CC, p. 15.
1874 B, p. 517.
1884 O, p. 784.
Nicholson and Lydekker 1889 A, p. 1147.
Zittel, K. A. 1890 A, p. 630.

Calamagras murivorus Cope.

Cope, E. D. 1873 CC, p. 15. (C. murivorous, C. truxalis.)
1874 B, p. 517. (C. murivorus, C. truxalis.)
1884 O, p. 784.
Oligocene (White River); Colorado.

OGMOPHIS Cope. Type *O. angulatus* Cope.

Cope, E. D. 1884 O, p. 782.
Nicholson and Lydekker 1889 A, p. 1147.
Zittel, K. A. 1890 A, p. 630.

Ogmophis angulatus Cope.

Cope, E. D. 1873 CC, p. 16. (Calamagras.)
1874 B, p. 518. (Calamagras.)
Cope, E. D. 1884 O, p. 783, pl. lviiia, fig. 12.
Oligocene (White River); Colorado.

Ogmophis oregonensis Cope.

Cope, E. D. 1884 O, p. 783, pl. lviiia, figs. 9-11.
Miocene (John Day); Oregon.

COLUBRIDÆ.

Gray, J. E. 1849, Cat. Snakes, p. 2.
Boulenger, G. A. 1893 A.
1894 A.
1896 C.
Cope, E. D. 1886 V, p. 484.
1900 A, p. 732.
Gadow, H. 1898 A, p. 28.
Hoffmann, C. K. 1890 C, p. 1683.
Stannius, H. 1856 A. (Colubrina.)

COLUBER Linn.

Linnæus, C. 1758, Syst. Nat., ed. x, p. 216.
Boulenger, G. A. 1894 A, p. 24.
Cope, E. D. 1900 A, p. 825.

Coluber sp. indet.

Wheatley, C. M. 1871 A.
Pleistocene; Pennsylvania.

BASCANION Baird and Girard. Type *Coluber constrictor* Linn.

Baird and Girard, 1853, Cat. N. Amer. Rept., p. 93.
Boulenger, G. A. 1893 A, p. 379. (Zamenis, in part.)
Cope, E. D. 1900 A, p. 787. (Zamenis, in part.)

Bascanion acuminatus (Cope).

Cope, E. D. 1899 A, p. 197. (Zamenis.)
Pleistocene; Pennsylvania.

CROTALIDÆ.

Boulenger, G. A. 1896 C, p. 519. (Crotalinæ.)
Cope, E. D. 1886 V, pp. 480-498.
1892 O.
1900 A, p. 1130.
Giebel, C. G. 1866 B.
Hoffmann, C. K. 1890 C, p. 1798.
Rochebrune, A. T. 1881 A, p. 216. ("Crotaliens.")
Stannius, H. 1856 A. (Crotalina.)
Troschel, F. H. 1861 A. (Crotalina.)

CROTALUS Linn. Type *C. horridus* Linn.

Linnæus, C., 1758, Syst. Nat., ed. x, p. 214.
Boulenger, G. A. 1896 C, p. 572.
Cope, E. D. 1900 A, p. 1149.

Crotalus horridus Linn.

Linnæus, C., 1758, Syst. Nat., ed. x, p. 214.
Cope, E. D. 1900 A, p. 1185.
Green, J. 1821 A.
Wheatley, C. M. 1871 A.
Pleistocene; Pennsylvania, New Jersey.

NEURODROMICUS Cope. Type *N. dorsalis* Cope.

Cope, E. D. 1873 CC, p. 15.
1874 B, p. 516.
1884 O, p. 785.
Hoffmann, C. K. 1890 C, p. 1814. (Neurodromus.)
Nicholson and Lydekker 1889 A, p. 1148.
Zittel, K. A. 1890 A, p. 631.

Neurodromicus dorsalis Cope.

Cope, E. D. 1873 CC, p. 15.
1874 B, p. 517.
1884 O, p. 786, pl. lviii, figs. 7, 8.
Oligocene (White River); Colorado.

HELAGRAS Cope. Type *H. prisciformis* Cope.

Cope, E. D. 1883 M, p. 545.
1883 W.
1884 O, p. 730.
Nicholson and Lydekker 1889 A, p. 1146.
Zittel, K. A. 1890 A, p. 632.
A genus of uncertain position.

Helagras prisciformis Cope.

Cope, E. D. 1883 M, p. 545.
1883 W.
1884 O, p. 731, pl. xxiv*g*. fig. 2.
1888 CC, p. 302.
Zittel, K. A. 1890 A, p. 632.
Eocene (Puerco); New Mexico.

CONIOPHIS Marsh. Type *C. precedens* Marsh.

Marsh, O. C. 1892 E. p, 450.
A genus of uncertain affinities.

Coniophis precedens Marsh.

Marsh, O. C. 1892 E, p. 450, figs. 1*a*–*e*.
Walcott, C. D. 1900 A, p. 23.
Cretaceous (Laramie); Wyoming.

Order DINOSAURIA Owen.

Owen, R. 1842 A, p. 102.
Baur, G. 1883 A.
1884 A.
1884 B.
1884 E.
1885 C.
1885 E.
1887 A, p. 487.
1887 C, p. 101.
1887 S, p. 333.
1891 C, p. 354.
1891 D.
Burckhardt, R. 1895 A.
Cannon, G. L. 1888 A, pp. 140, 190.
Cope, E. D. 1869 M, pp. 33, 86.
1871 B, p. 234.
1872 Q.
1877 G, p. 588.
1878 K.
1879 A, p. 38.
1882 J, p. 981.
1882 Q.
1883 J, p. 97.
1883 DD.
1885 G, p. 246.
1886 E.
1889 R, p. 864.
Cope, E. D. 1891 N, p. 41.
1892 R.
1892 Z, p. 17.
1898 B, pp. 56, 68.
1900 A, p. 160.
Dames, W. 1884 A.
Dawkins, W. B. 1871 A.
Dollo, L. 1882 B.
1883 B.
1883 C.
1884 B.
1888 E.
Fürbringer, M. 1888 A.
1900 A, pp. 347, 535, 651.
Gadow, H. 1897 A, p. 204.
1898 A, p. 22.
Gegenbaur, C. 1898 A.
Günther, A. 1866 A, p. 442.
Haeckel, E. 1895 A, p. 374.
Hay, O. P. 1899 F, p. 682.
Hoffmann, C. K. 1890 B.
Hulke, J. W. 1883 A.
1883 B.
1884 A.
Huxley, T. H. 1868 A, p. 362.
1870 A, p. 438.
1870 C.

Huxley, T. H. 1870 D.
1872 A, p. 223. (Ornithoscelida.)
1875 B.
1876 B, xiii, p. 515.
Kehner, F. A. 1876 A.
Lydekker, R. 1888 A.
1888 B, p. 131.
1893 E, p. 139.
Marsh, O. C. 1877 E.
1878 F.
1879 B.
1880 D.
1881 E.
1881 H.
1882 A.
1884 A.
1884 B.
1884 G.
1885 D.
1889 B.
1895 B.
1895 C.
1896 A.
1896 C.
1896 D.
Morse, E. S. 1880 A, p. 3.
Nicholson and Lydekker 1889 A, p. 1151.
Osborn, H. F. 1899 H, p. 161.
1900 G, p. 777.
Owen, R. 1854 B, p. 1.
1860 A, p. 164.
1860 E, p. 257.
1866 A, p. 18.
1875 C.
Parker, W. K. 1887 A, p. 331.
Pictet, F. J. 1853 A, p. 466. ("Dinosauriens.")
Quenstedt, F. A. 1852 A, p. 111.
Seeley, H. G. 1879 A.
1887 B.
1888 B.
1888 C.
1888 G.
Steinmann and Döderlein 1890 A, p. 658.
Tomes, C. S. 1898 A, p. 287.
Vetter, B. 1885 A.
White, C. A. 1883 A.
Wiedersheim, R. 1881 A, p. 366.
Woodward, A. S. 1898 B, p. 196.
Zittel, K. A. 1890 A, pp. 450, 689, 767.

SUBORDER OPISTHOCŒLIA Owen.

Owen, R. 1860 A, p. 164.

Unless otherwise indicated, the following authors employ the term *Sauropoda* for this group.

Baur, G. 1883 A.
1884 A.
1887 C, p. 101. (Opisthocœlia.)
1891 D, p. 451. (Cetiosauria.)
Cope, E. D. 1882 Q. (Sauropoda a synonym of Opisthocœlia.)
1883 J, p. 98. (Opisthocœlia.)
1889 E.
1889 R, p. 864. (< Saurischia.)
1891 N, p. 43. (< Saurischia.)
1898 B, p. 68. (< Saurischia.)
Dollo, L. 1884 B.
1892 C, p. 10.
Fürbringer, M. 1900 A.
Gadow, H. 1897 A, p. 204.
1898 A. p. 22.
Haeckel, E., 1895 A, pp. 382, 386.
Hulke, J. W. 1879 A.
1880 A.
1882 A.
Huxley, T. H. 1867 A, p. 415.
1869 B.
Lydekker, R. 1886 C, p. 275.
1888 A, p. 53.
Lydekker, R. 1888 B, p. 131.
Marsh, O. C. 1878 F, p. 412.
1879 B.
1881 E.
1882 A, p. 83.
1883 A, pp. 82, 85.
1884 A.
1884 G.
1885 D.
1889 B, p. 324.
1896 C, pp. 164, 241.
1896 D, p. 207.
1898 C.
Nicholson and Lydekker 1889 A, p. 1170.
Osborn, H. F. 1898 J, p. 221. (Cetiosauria.)
1900 G, p. 786. (Cetiosauria.)
Owen, R. 1875 C, p. 27. (Cetiosaurus.)
Science 1885 B.
Seeley, H. G. 1888 B. (< Saurischia.)
1888 C, p. 86. (Cetiosauria.)
1888 G, p. 171. (< Saurischia.)
1892 A, p. 349. (< Saurischia.)
Steinmann and Döderlein 1890 A, p. 661.
Vetter, B. 1885 A, p. 117.
Woodward, A. S. 1898 B, p. 200.
Zittel, K. A. 1890 A, pp. 693, 702.

MOROSAURIDÆ.

Marsh, *O. C.* 1882 A, p. 83.
Baur, G. 1895 A, p. 1001.
1896 A, p. 145.
Lydekker, R. 1888 B, p. 133. (Cetiosauridæ.)
1889 C, p. 59. (Cetiosaurus.)
1889 J. (On Cardiodon).
1890 A, p. 236. (<Cetiosauridæ.)
Marsh, O. C. 1883 A, p. 85.
1884 A.
Marsh, O. C. 1884 G.
1885 D.
1888 A, p. 92. (Pleurocœlidæ.)
1889 B, p. 324. (Morosauridæ, Cetiosauridæ, Pleurocœlidæ.)
1895 C, p. 495 (Morosauridæ); p. 496 (Pleurocœlidæ).
1896 C, p. 241 (Morosauridæ); p. 242 (Pleurocœlidæ, Cardiodontidæ).

Marsh, O. C. 1896 D, p. 208. (Morosauridæ, Pleurocœlidæ.)
1896 F, p. 435.
1897 C, p. 496.
1898 C, p. 488. (Morosauridæ, Pleurocœlidæ.)
Nicholson and Lydekker 1889 A, p. 1177. (<Cetiosauridæ.)
Owen, R. 1841 E. p. 457. (Cetiosaurus.)
1859 D, p. 27. (Cetiosaurus.)
Pictet, F. J. 1853 A, p. 493. (Cetiosaurus.)
Steinmann and Döderlein 1890, A, p. 663.
Williston, S. W. 1895, A, p. 169.
Williston and Case 1892 A, p. 16.
Zittel, K. A. 1890 A, p. 709.

MOROSAURUS Marsh. Type *M. impar* Marsh.

Marsh, O. C. 1878 B, p. 242.
Baur, G. 1883 A, p. 433.
Giebel, C. G. 1879 A, p. 317.
Hulke, J. W. 1888 A, p. 425.
Krause, W. 1881 A.
Lydekker, R. 1888 A, p. 59.
1888 B, p. 134.
1889 C, p. 59.
1890 A, p. 236.
Marsh, O. C. 1878 F, p. 412.
1879 B.
1883 A, p. 82.
1884 A.
1888 A, p. 90.
1895 C, p. 495.
1896 C, p. 181.
1897 C, p. 496.
Nicholson and Lydekker 1889 A, pp. 1177, 1179.
Osborn, H. F. 1898 J, p. 221.
1899 H, p. 168.
1900 G, p. 787.
Steinmann and Döderlein 1890 A, p. 663.
Wiedersheim, R. 1881 A.
Williston, S. W. 1895 A, p. 165.
1898 F.
Zittel, K. A. 1890 A, p. 709.

Morosaurus agilis Marsh.

Marsh, O. C. 1889 C, p. 334, fig. 3.
1896 C, pl. xxx, fig. 1; pl. xxxvii, figs. 1, 2.
Osborn, H. F. 1899 H, p. 170, fig. 6.
Jurassic; Colorado.

Morosaurus grandis Marsh.

Marsh, O. C. 1877 G, p. 515. (Apatosaurus.)
King, C. 1878 A, p. 346. (Apatosaurus.)
Lydekker, R. 1888 B, p. 133, figs. 20, 21.
Marsh, O. C. 1878 F, p. 514, pls. v–vii.
1879 B, pls. iii, v, vii.
1880 C, p. 254.
1883 A, pp. 83, 85.
1896 C, p. 181, pl. xxx, figs. 2, 3; pl. xxxi, pl. xxxii, figs. 4–6; pl. xxxiv, figs. 1, 5–7, pl. xxxv, fig. 3; pl. xxxviii· pl. xxxix, figs. 4, 5; text figs. 31–33.
1897 C, p. 497, figs. 49–51.
Williston, S. W. 1898 F, figs. 1, 2.
Zittel, K. A. 1890 A, p. 709, figs. 614–617.
Jurassic; Wyoming?, Colorado.

Morosaurus impar Marsh.

Marsh, O. C. 1878 B, p. 242.
King, C. 1878 A, p. 346.
Jurassic; "Rocky Mountain region."

Morosaurus lentus Marsh.

Marsh, O. C. 1889 C, p. 333, fig. 2.
1895 C, p. 488, fig. 8.
1896 C, p. 182, pl. xxxii, figs. 1, 2; pl. xxxiii; pl. xxxiv, figs. 3, 4; pl. xxxv, fig. 4; pl. xxxvi, fig. 1; pl. xxxvii, figs. 3–5; text figs 34, 63.
1896 D, p. 20, fig. 8.
Jurassic; Wyoming.

Morosaurus robustus Marsh.

Marsh, O. C. 1878 F, p. 414, pl. viii.
1879 H, p. 503.
1896 C, pl. xxxv, figs. 1, 2.
Jurassic; Wyoming.

PLEUROCŒLUS Marsh. Type *P. nanus* Marsh.

Marsh, O. C. 1888 A, p. 90.
Lydekker, R. 1888 B, p. 134.
1890 A, p. 237.
1890 B, p. 182, pl. ix.
Marsh, O. C. 1895 C, p. 490.
1896 C, p. 183.
1897 E, p. 415.
1898 C, p. 488.
Nicholson and Lydekker 1889 A, p. 1179.
Zittel, K. A. 1890 A, p. 714.

Pleurocœlus altus Marsh.

Marsh, O. C. 1888 A, p. 92.
Jurassic (Potomac); Maryland.

Pleurocœlus montanus Marsh.

Marsh, O. C. 1896 C, p. 184, figs. 35–41.
Walcott, C. D. 1900 A, p. 23.
Formation and locality not given.

Pleurocœlus nanus Marsh.

Marsh, O. C. 1888 A. p. 90, figs. 1–6.
Lydekker, R. 1890 A, p. 238, fig. 52.
Marsh, O. C. 1896 C, pls. xl, xli.
Jurassic (Potomac); Maryland.

EPANTERIAS Cope. Type *E. amplexus* Cope.

Cope, E. D. 1878 V, p. 406.
Zittel, K. A. 1890 A, p. 709.

Epanterias amplexus Cope.

Cope, E. D. 1878 V, p. 406.
Jurassic; Colorado.

CAULODON Cope. Type *C. diversidens* Cope.

Cope, E. D. 1877 F, p. 193.
Nicholson and Lydekker, 1889 A, p. 1176.
Zittel, K. A. 1890 A, p. 711.
The position of this genus is doubtful.

Caulodon diversidens Cope.

Cope, E. D. 1877 F, p. 193.
1878 I, p. 247.
Osborn, H. F. 1898 J, p. 227.
Jurassic; Colorado.

Caulodon leptoganus Cope.

Cope, E. D. 1878 I, p. 247.
Jurassic; Colorado.

SYMPHYROPHUS Cope. Type *S. musculosus* Cope.

Cope, E. D. 1878 I, p. 246.
1878 H, p. 391.
1878 M, p. 84.
Zittel, K. A. 1890 A, p. 726.
A genus of doubtful position.

Symphyrophus musculosus Cope.

Cope, E. D. 1878 I, p. 246.
1878 H, p. 391.
Osborn, H. F. 1898 J, p. 227.
Jurassic; Colorado.

ASTRODON Johnston. Type *A. johnstoni* Leidy.

Johnston, C., in Leidy, J. 1865 A, p. 102.
1859 A, p. 341. (Name; no description.)
Marsh, O. C. 1896 C, p. 242.
1898 C, p. 488.
Zittel, K. A. 1890 A, p. 717.
A genus of uncertain affinities.

Astrodon johnstoni Leidy.

Leidy, J. 1865 A, pp. 102, 119, pl. xiii, figs. 20–23; pl. xx, fig. 10.
Bibbins, A. 1895 A, p. 19, fig. H. (This species?)
Cope, E. D. 1869 M, p. 99.
Marsh, O. C. 1896 C, p. 164, text fig. 6.
Jurassic (Potomac); Maryland.

ATLANTOSAURIDÆ.

Marsh, O. C. 1877 G, p. 514.
Cope, E. D. 1877 R, p. 3. (Camarasauridæ, Amphicœliidæ.)
1878 I, p. 243. (Camarasauridæ, Amphicœliidæ.)
1883 J, p. 99. (Camarasauridæ.)
1898 B, p. 68. (Cetiosauridæ.)
Günther, A. 1886 A, p. 443.
Lydekker, R. 1888 B, p. 143.
Marsh, O. C. 1878 B, p. 240.
1882 A, p. 83.
1883 A, pp. 82, 85.
Marsh, O. C. 1884 A, p. 167.
1885 D.
1889 B.
1893 B.
1895 C, p. 495.
1896 C, pp. 166, 241.
1896 D, p. 208.
1897 C, p. 494.
1898 C, p. 487.
Nicholson and Lydekker 1889 A, p. 1178.
Steinmann and Döderlein 1890 A, p. 662.
Zittel, K. A. 1890 A, p. 705.

ATLANTOSAURUS Marsh. Type *Titanosaurus montanus* Marsh.

Marsh, O. C. 1877 G, p. 514. (To replace Titanosaurus Marsh, preoccupied.)
Cope, E. D. 1878 I, p. 237.
Giebel, C. G. 1879 A, p. 318.
Hulke, J. W. 1879 A.
Lydekker, R. 1888 B, p. 144.
Marsh, O. C. 1877 C. (Titanosaurus, type *T. montanus.*)
1877 E.
1878 G, p. 224.
1879 B, p. 88, pls. vi, vii.
1895 C, p. 495.
1896 C, p. 166.
1897 C, p. 485.
Nicholson and Lydekker 1889 A, p. 1173.
Osborn, H. F. 1898 J, p. 219 *et seq.*
Steinmann and Döderlein 1890 A, p. 662.
Zittel, K. A. 1890 A, p. 705.

Atlantosaurus immanis Marsh.

Marsh, O. C. 1878 B, p. 241.
Barbour, E. H. 1890 B, p. 392, figs. 3, 4.
King, C. 1878 A, p. 346.
Lydekker, R. 1888 B, p. 145.
Marsh, O. C. 1879 B, p. 89, pl. vii.
1896 C, p. 166, pl. xvi.
1897 C, pp. 488, 526, figs. 34–35*a*.
Nicholson and Lydekker 1889 A, p. 1174.
Jurassic; Wyoming, Colorado.

Atlantosaurus montanus Marsh.

Marsh, O. C. 1877 C. (Titanosaurus.)
Cope, E. D. 1877 Q, p. 6. (No name.)
1878 I, p. 237. (Titanosaurus.)
King, C. 1878 A, p. 346.
Marsh, O. C. 1877 E.
1879 B, p. 88, pl. vi,
1896 C, p. 166, pl. xv; pl. xvii, fig. 1.
1897 C, p. 487, fig. 33.
Osborn, H. F. 1898 J, p. 228, fig. 7 B.
Williston, S. W. 1878 A, p. 43. (Titanosaurus.)
Jurassic; Colorado.

APATOSAURUS Marsh. Type *A. ajax* Marsh.

Marsh, O. C. 1877 G, p. 514.
Giebel, C. G. 1879 A, p. 317.
Marsh, O. C. 1879 B, p. 86.
1883 A, p. 82.
1895 C, p. 495.
1896 C, p. 166.
1897 C, p. 489.
Nicholson and Lydekker 1889 A, p. 1178.
Osborn, H. F. 1898 J, p. 219 *et seq.*
Zittel K. A. 1890 A, p. 706.

Apatosaurus ajax Marsh.

Marsh, O. C. 1877 G, p. 514.
King, C. 1878 A, p. 346.
Marsh, O. C. 1879 B, p. 87, pl. iv; pl. vi, fig. 1.
1896 C, p. 168, pl. xviii, figs. 2, 3; text figs. 7, 8.
1897 C, pp. 490, 526, figs. 37, 38.
Osborn, H. F. 1898 J, p. 228, figs. 7 B, 9.
Jurassic; Colorado.

Apatosaurus laticollis Marsh.

Marsh, O. C. 1879 B, p. 88, pl. iii, figs. 1, 2.
Barbour, E. H. 1890 B, p. 390, figs. 1, 2.
Marsh, O. C. 1896 C, pl. xviii, fig. 1; pl. xix, fig. 1.
1897 C, pp. 490, 526, fig. 36.
Zittel, K. A, 1890 A, p. 706, fig. 609.
Jurassic; Colorado.

BAROSAURUS Marsh. Type *B. lentus* Marsh.

Marsh, O. C. 1890 A, p. 85, pl. i, figs. 1. 2.
1895 C, p. 495.
1896 C, p. 174.
1898 C, p. 488.
Zittel, K. A. 1890 A, p. 716.

Barosaurus affinis Marsh.

Marsh, O. C. 1899 A, p. 228. (No description.)
Jurassic; Wyoming.

Barosaurus lentus Marsh.

Marsh, O. C. 1890 A, p. 85, text figs. 1, 2.
1896 C, p. 174, text figs. 24-26.
1899 A, p. 228.
Jurassic; South Dakota.

BRONTOSAURUS Marsh. Type *B. excelsus* Marsh.

Marsh, O. C. 1879 H, p. 503.
Fürbringer, M. 1900 A, p. 352.
Hulke, J. W. 1883 A, p. 62.
1888 A, p. 425.
Lydekker, R. 1888 A, p. 55.
1893 E, p. 139.
Marsh, O. C. 1880 D, p. 395.
1881 E, p. 417, pls. xii-xviii.
1883 A.
1891 C, p. 341, pl. xvi.
1895 C, p. 495.
1896 C, p. 168.
1897 C, p. 492.
Nicholson and Lydekker 1889 A, p. 1178.
Osborn, H. F. 1898 J, p. 219 *et seq.*
1899 E, pp. 205, 207, 213.
1899 H, p. 162, fig. 1 B, p. 171, fig. 7.
1900 G, p. 788.
Steinmann and Döderlein 1890 A, p. 662.
Woodward, A. S. 1898 B, p. 201.
Zittel, K. A. 1890 A, p. 706.

Brontosaurus amplus Marsh.

Marsh, O. C. 1881 E, p. 421.
Marsh, O. C. 1896 C, p. 173, text figs. 17, 20, 29.
Jurassic; Wyoming.

Brontosaurus excelsus Marsh.

Marsh, O. C. 1879 H, p. 503.
Fürbringer, M. 1900 A, p. 353, fig. 124.
Geinitz and Deichmüller 1882 A.
Hutchison, H. N. 1893 A, p. 66, pl. iv.
Lydekker, R. 1888 B, p. 144, fig. 28.
1893 B, p. 302, fig. 1.
Marsh, O. C. 1880 D, p. 395, pl. xviii.
1881 E, p. 417, pls. xii-xviii.
1883 A, pl. i.
1891 C, p. 341, pl. xvi.
1893 I, p. 437.
1895 C, pl. x, fig. 2.
1896 C, p. 169, pls. xx-xxiv; pl. xlii; text figs. 9-16, 21-23.
1896 D, pl. i, fig. 2.
1897 C, p. 492, pl. xxi, text figs. 39-43.
Osborn, H. F. 1898 J, 223 *et seq.*, figs. 6, 7 C, 8, 12.
Woodward, A. S. 1898 B, p. 201, figs. 121, 122.
Zittel, K. A. 1890 A, p. 707, figs. 610-613.
Jurassic; Wyoming, Colorado.

CAMARASAURUS Cope. Type *C. supremus* Cope.

Cope, E. D. 1877 A.
1877 W.
1878 E.
1878 I, pp. 233, 234.
1878 M.
1878 V.
1879 A, p. 35.
Hulke, J. W. 1879 A.
1880 A.
Hulke, J. W. 1882 A.
Lydekker, R. 1888 A, p. 54.
Marsh, O. C. 1895 C, p. 495.
1898 C, p. 488.
Osborn, H. F. 1898 J, p. 219.
1900 G, pp. 786, 788.
Owen, R. 1878 D.
Zittel, K. A. 1890 A, p. 711. (Camarosaurus.)

Camarasaurus leptodirus Cope.

Cope, E. D. 1879 R, p. 403, figs. 1-3.
Jurassic: Colorado.

Camarasaurus supremus Cope.

Cope, E. D. 1877 Q.
1877 W.
1878 E.
Cope, E. D. 1878 I, p. 237, figs. 1-12.
1878 M, figs. 1-12.
1891 N, p. 43, fig. 21.
1898 B, p. 68, fig. 22, A. B.
Marsh, O. C. 1879 B, p. 89.
Osborn, H. F. 1898 J, p. 227 *et seq.*, figs. 10, 11.
Williston, S. W. 1878 A, p. 43.
Zittel, K. A. 1890 A, p. 712, fig. 618.
Jurassic; Colorado.

AMPHICŒLIAS Cope. Type *A. altus* Cope.

Cope, E. D. 1877 R.
1878 I, p. 242.
1878 M.
Lydekker, R. 1888 A, p. 54.
Marsh, O. C. 1881 E, p. 419. (Syn. of Brontosaurus.)
1896 C, p. 241. (Syn. of Camarasaurus.)
1898 C, p. 488.
Osborn, H. F. 1898 J, p. 219 *et seq.*
Zittel, K. A. 1890 A, p. 709.

Amphicœlias altus Cope.

Cope, E. D. 1877 R, p. 3.
1878 I, p. 243, figs. 13-15.
1878 M, figs. 13-17.
1879 X, p. 798*a*.
Cope, E. D. 1898 B, p. 69, fig. 22, C.
Jurassic; Colorado.

Amphicœlias fragillimus Cope.

Cope, E. D. 1878 Y, figure.
1881 BB, p. 413. (A. fragillissimus; syn.? of Cœlurus fragilis.)
1884 W. (A. fragilissimus.)
1898 B, p. 68. (A. fragilissimus.)
Jurassic; Colorado.

Amphicœlias latus Cope.

Cope, E. D. 1873 R, p. 4.
1878 I, p. 245, figs. 17, 18.
Jurassic; Colorado.

DIPLODOCIDÆ.

Marsh, O. C. 1884 A.
1884 G.
1885 D.
1889 B, p. 324.
1895 C, p. 495.
Marsh, O. C. 1896 C, p. 241.
1896 D, p. 208.
1898 C, p. 488.
Nicholson and Lydekker 1889 A, p. 1176.
Zittel, K. A. 1890 A, p. 714.

DIPLODOCUS Marsh. Type *D. longus* Marsh.

Marsh, O. C. 1878 F, p. 414.
Baur, G. 1891 D, p. 445.
Cope, E. D. 1884 W.
Dollo, L. 1884 B.
Giebel, C. G. 1879 A, p. 317.
Hatcher, J. B. 1900 A, p. 718.
1900 B, p. 828.
Holland, W. J. 1900 A, p. 816.
Lydekker, R. 1888 A, p. 53.
Marsh, O. C. 1880 C, p. 255, pl. vi, figs. 4, 5. (Stegosaurus armatus, *errore.*)
1883 A, p. 85.
1884 A.
1895 C, p. 495.
1896 C, p. 175.
1897 C, p. 494.
Nicholson and Lydekker 1889 A, p. 1176.
Osborn, H. F. 1898 J, p. 221.
1899 C, p. 315.
1899 E.
1899 H, p. 165, fig. 1 A.
1900 G, pp. 787, 790, fig. 8.
Steinmann and Döderlein 1890 A, p. 662.
Woodward, A. S. 1898 B, p. 204.
Zittel, K. A. 1890 A, p. 714

Diplodocus lacustris Marsh.

Marsh, O. C. 1884 A, p. 164.
Jurassic; Colorado.

Diplodocus longus Marsh.

Marsh, O. C. 1878 F, p. 414, pl. viii, figs. 3, 4.
Cope, E. D. 1884 W.
Hatcher, J. B. 1900 B, p. 828. ("Diplodocus.")
Holland, W. J. 1900 A, p. 816. ("Diplodocus.")
Lydekker, R. 1888 B, p. 132, fig. 19.
Marsh, O. C. 1884 A, p. 168, pls. iii, iv.
1896 C, p. 175, pls. xxv-xxix, fig. 1; pl. xxxix, fig. 5, text figs. 27-29.
1897 C, p. 495, figs. 44-48.
Osborn, H. F. 1899 E, p. 191, pls. xxiv-xxviii, text figs. 1-8, 11-14.
Walcott, C. D. 1900 A, p. 23.
Woodward, A. S. 1898 B, p. 204, fig. 124.
Zittel, K. A. 1890 A, p. 715, figs. 620-622.
Jurassic; Wyoming, Colorado.

Suborder Theropoda Marsh.

Marsh, O. C. 1881 E, p. 423.
Baur, G. 1883 A, p. 441. (Theropoda.)
1887 C, p. 101. (Goniopoda.)
1891 D, p. 451. (Megalosauria.)
Cope, E. D. 1866 E, p. 317. (Goniopoda.)
1867 D. (>Symphypoda.)
1869 M, p. 99 (Goniopoda); p. 120 (Symphypoda).
1871 B, p. 234. (Goniopoda, Symphypoda.)
1882 Q. (Goniopoda.)
1883 J, p. 98. (Goniopoda.)
1889 R, p. 864. (<Saurischia.)
1891 N, p. 43. (<Saurischia.)
1898 B, p. 68. (<Saurischia.)
Dollo, L. 1892 C, p. 12. ("Théropodes.")
Fitzinger, L., 1843, Syst. Rept., p. 35. (Fam. Megalosauri.)
Fürbringer, M. 1888 A.
1900 A.
Gadow, H., 1897 A, p. 204.
1898 A, p. 22.
Günther, A. 1886 A, p. 443.
Haeckel, E. 1895 A, p. 384.
Huxley, T. H. 1870 D, p. 35.
Lydekker, R. 1888 A, p. 59.
1888 B, p. 154.
Marsh, O. C. 1882 A, p. 84.
1884 B.
1884 G.
1885 D, p. 764.
1889 B, p. 329.
1895 C, p. 492.
1896 C, pp. 146, 239.
1896 D, p. 205.
Nicholson and Lydekker 1889 A, p. 1164.
Seeley, H. G. 1888 B. (<Saurischia.)
1892 A, p. 349. (<Saurischia.)
Steinmann and Döderlein 1890 A, p. 659.
Vetter. B. 1885 A, p. 117.
Woodward, A. S. 1898 B, p. 197.
Zittel, K. A. 1890 A, pp. 450, 693, 717.

MEGALOSAURIDÆ.

Huxley, T. H. 1870 D, p. 34.
Baur, G. 1883 A, p. 440.
Cope, E. D. 1868 C, p. 417. (Dinodontidæ.)
1869 M, p. 117. (Dinodontidæ.)
1889 R, p. 864.
1898 B, p. 68.
Dawkins, W. B. 1871 A.
Lydekker, R. 1888 B, p. 157.
Marsh, O. C. 1879 B, p. 89. (Allosauridæ.)
1881 E, p. 423. (Allosauridæ.)
1882 A, pp. 84, 85. (Megalosauridæ, Labrosauridæ.)
1884 B, p. 337. (Megalosauridæ, Labrosauridæ.)
1884 G. (Megalosauridæ, Labrosauridæ.)
Marsh, O. C. 1885 D, p. 764. (Megalosauridæ, Labrosauridæ.)
1890 C, p. 424. (Dryptosauridæ.)
1895 C, p. 493. (Megalosauridæ, Dryptosauridæ, Labrosauridæ.)
1896 C, pp. 203, 239. (Megalosauridæ, Dryptosauridæ, Labrosauridæ.)
1896 D, p. 206. (Megalosauridæ, Dryptosauridæ, Labrosauridæ.)
Nicholson and Lydekker 1889 A, p. 1167.
Owen, R. 1883 B.
Seeley, H. G. 1894 A.
Steinmann and Döderlein, 1890 A, p. 660.
Zittel, K. A. 1890 A, p. 722.

Megalosaurus Buckland. Type *M. bucklandi* Meyer.

Buckland, W. 1824 A.
Bronn, H. G. 1837 A, p. 530, pl. xxxiv, fig. 1.
Cope, E. D. 1868 K, p. 239. (Megalosaurus, Pœkilopleuron.)
1869 M, p. 100. (Pœcilopleurum); p. 108 (Megalosaurus).
Deslongchamps-Eudes, J. A. 1838 A, p. 36. (Pœkilopleuron, type *P. bucklandi*, in part.)
Gaudry, A. 1890 C, p. 227.
Hulke, J. W. 1879 B.
Huxley, T. H. 1869 D.
1870 D.
Lydekker, R. 1888 B, p. 159.
Marsh, O. C. 1895 A, p. 408.
Osborn, H. F. 1900 G, p. 786.
Owen, R, 1842 A, p, 103.
1845 B, p. 269.
1856 A.
1860 E, p. 258.
1876 C. (Pœkilopleuron.)
1883 B, pl. xi.
Pictet, F. J. 1853 A, p. 467 (Megalosaurus); p. 497 (Pœcilopleuron).
Quenstedt, F. A. 1852 A, p. 112.
Zittel, K. A. 1890 A, p. 722.

No species of this genus is at present known from this country.

Dryptosaurus Marsh. Type *Lælaps aquilunguis* Cope.

Marsh, O. C. 1877 C, p. 88. (To replace *Lælaps* Cope, preoccupied.)

Unless otherwise indicated the following writers refer to this genus under name *Lælaps*.

Baur, G. 1883 A, p. 441.
Cope, E. D. 1866 A. (Lælaps, type *L. aquilunguis*.)
1866 E.
1867 D.

Cope, E. D. 1868 C.
1868 K, p. 237.
1869 M, p. 100.
1871 B, p. 239.
1876 I, p. 340.
1877 H, p. 806.
1877 T.
1878 K.
1892 Z, p. 17, pl. iii.
Huxley, T. H. 1870 C.
Leidy, J. 1868 F, p. 199.
Lippincott, J. S. 1881 A.
Lydekker, R. 1888 B, pp. 159, 169. (Dryptosaurus.)
Marsh, O. C. 1895 C, p. 493.
1896 C, p. 203.
1896 D.
Morse, E. S. 1880 A, p. 4.
Osborn, H. F. 1893 B, p. 326.
Zittel, K. A. 1890 A, p. 726.

Dryptosaurus aquilunguis (Cope).

Cope, E. D. 1866 A. (Lælaps.)
1866 B. (Lælaps aquilunguis, part; L. macropus, part.)
1866 E. (Lælaps.)
1867 E, p. 27. (Lælaps.)
1868 C. (Lælaps.)
1868 K, p. 237. (Lælaps.)
1869 B, p. 737. (Lælaps.)
1869 K, p. 91, pl. ii. (Lælaps.)
1869 M, pp. 100, 118, 122 J, pls. viii, ix; pl. x, figs. 1-6. (Lælaps.)
1870 K. (Lælaps.)
1875 E, p. 249. (Lælaps.)
1877 T. (Lælaps.)
Lucas, F. A. 1898 C, p. 97.
Lydekker, R. 1888 B, p. 170.
Marsh, O. C. 1877 C, p. 88.
Osborn, H. F. 1898 N, pp. 843, 844, fig. 3. (Megalosaurus.)
1898 Q, pp. 6, 19, pl. iii. (Megalosaurus.)
Cretaceous; New Jersey.

Dryptosaurus cristatus (Cope).

Cope, E. D. 1876 I, p. 344. (Lælaps.)
1877 G, p. 572. (Lælaps.)
Cretaceous; Montana.

Dryptosaurus explanatus (Cope).

Cope, E. D. 1876 H, p. 249. (Lælaps.)
1877 G, p. 572. (Lælaps.)
Cretaceous; Montana.

Dryptosaurus falculus (Cope).

Cope, E. D. 1876 H, p. 249. (Lælaps.)
1877 G, p. 572. (Lælaps.)
Cretaceous; Montana.

Dryptosaurus hazenianus (Cope).

Cope, E. D. 1876 I, p. 343. (Lælaps.)
1877 G, p. 572. (Lælaps.)
Cretaceous; Montana.

Dryptosaurus incrassatus (Cope).

Cope, E. D. 1876 H, p. 248. (Lælaps.)
1876 I, pp. 340, 341. (Lælaps.)
1877 G, p. 572. (Lælaps.)
1877 T. (Lælaps.)
1892 K, p. 240. (Lælaps.)
1892 Z, p. 17, pl. iii. (Lælaps.)
Hay, O. P. 1899 G, p. 348.
Lambe, L. M. 1899 A, pp. 69, 70. (Lælaps.)
Cretaceous; Montana, British America.

Dryptosaurus kenabekides Hay.

Hay, O. P. 1899 G, p. 348.
Leidy, J. 1856 F, p. 72. (Deinodon horridus, in part.)
1860 A, p. 143 (in part), pl. ix, figs. 21-34. (Deinodon horridus.)
1868 F, p. 198. (Deinodon horridus.)
Cretaceous (Laramie); Montana.

Dryptosaurus lævifrons (Cope).

Cope, E. D. 1876 I, p. 344. (Lælaps.)
1877 G, p. 572. (Lælaps.)
Cretaceous; Montana.

Dryptosaurus macropus (Cope).

Cope, E. D. 1868 C, p. 417. (Lælaps.)
1866 B. (L. aquilunguis, in part.)
1869 B, p. 737. (Lælaps.)
1869 M, p. 118, figs. 31-34. (Lælaps.)
1875 E, p. 249. (Lælaps.)
Leidy, J. 1865 A, p. 119. (Cœlosaurus antiquus, in part, *fide* Cope.)
Cretaceous; New Jersey.

Dryptosaurus trihedrodon (Cope).

Cope, E. D. 1877 H, p. 805. (Lælaps.)
1877 Q, p. 5. (Lælaps.)
1878 M, p. 73. (Lælaps.)
1878 R. (Syn.? of Hypsirophus discurus.)
Jurassic; Colorado.

DEINODON Leidy. Type *D. horridus* Leidy.

Leidy, J. 1856 F, p. 72.
Cope, E. D. 1866 A, p. 279. (Dinodon, restricted.)
1868 C. (Dinodon.)
1869 M, pp. 100, 116. (Aublysodon; Dinodon said to be preoccupied.)
1875 E, p. 248. (Aublysodon.)
1876 I, p. 341. (Aublysodon.)
Hay, O. P. 1899 G, p. 346.
Leidy, J. 1856 C, p. 119. (Deinodon.)
1860 A, p. 143, in part. (Deinodon.)
1868 F, p. 198. (Dinodon, restricted; Aublysodon, type *A. mirandus.*)
Marsh, O. C. 1892 G, p. 174. (Aublysodon.)
Zittel, K. A. 1890 A, p. 726. (Aublysodon.)

Deinodon amplus (Marsh).

Marsh, O. C. 1892 G, p. 174, pl. ii, fig. 5. (Aublysodon.)
Cretaceous (Laramie); Wyoming?

Deinodon cristatus (Marsh).

Marsh, O. C. 1892 G, p. 175, pl. iii, fig. 6. (Aublysodon,)
Cretaceous (Laramie); Wyoming?

Deinodon horridus Leidy.

Leidy, J. 1856 F, p. 72. (In part.)
Cope, E. D. 1866 A, p. 279. (Dinodon horridus, restricted.)
1868 C, p. 416. (Dinodon.)
1869 M, p. 120. (Aublysodon.)
1871 C, p. 120. (Aublysodon.)
1874 C, p. 26. (Aublysodon.)
1875 E, p. 249. (Aublysodon.)
1876 I, p. 341, (Aublysodon.)
1877 G, p. 572. (Aublysodon.)
Leidy, J. 1856 C, p. 119. (In part.)
1860 A, p. 143, pl. ix, figs. 36–45; not figs. 21–34; 46–48.
1868 F, p. 198. (Aublysodon mirandus).
Marsh, O. C. 1892 G, p. 174, pl. iii, fig. 4. (Aublysodon mirandus.)
Cretaceous (Laramie): Montana.

The teeth represented on plate ix, of Leidy 1860 A, figs. 21–34, 46–48, are by Cope's restriction of *Deinodon* left without a name. They possibly belong to *Dryptosaurus* and are in this work given the name *Dryptosaurus kenabekides*.

Deinodon lateralis (Cope).

Cope, E. D. 1876 H, p. 248. (Aublysodon.)
1877 G, p. 572. (Aublysodon.)
Cretaceous (Laramie); Montana.

ALLOSAURUS Marsh. Type *A. fragilis* Marsh.

Marsh, O. C. 1877 G, p. 515.
Bibbins, A. 1895 A, p. 19.
Giebel, C. G. 1879 A, p. 318.
Lydekker, R. 1888 B, p. 159.
Marsh, O. C. 1879 B, p. 90.
1884 B, pls. xi, xii.
1889 B, p. 329.
1896 C, p. 163.
Nicholson and Lydekker 1889 A, p. 1168.
Osborn, H. F. 1899 H, p. 161, fig. 1, C. D.; figs. 4, 5.
1900 G, pp. 779, 785, figs. 2, 4.
Steinmann and Döderlein 1890 A, p. 660.
Williston, S. W. 1878 A, p. 46.
Zittel, K. A. 1890 A, p. 725.

Allosaurus fragilis Marsh.

Marsh, O. C. 1877 G, p. 515.
King, C. 1878 A, p. 346.
Lydekker, R. 1888 B, p. 154, fig. 25.
Marsh, O. C. 1879 B, p. 91, pls. viii, x.
1884 B, pl. xiii.
1896 C, p. 163, pl. x, fig. 2; pl. xi, figs. 1, 2 (Allosaurus); pl. xiii, fig. 5 (Labrosaurus).
1897 C, p. 505, fig. 61.
1899 A, p. 232, fig. 3.
Zittel, K. A. 1890 A, p. 726, fig. 628. (A. agilis *errore*.)
Jurassic; Colorado.

CŒLOSAURUS Leidy. Type *C. antiquus* Leidy.

Leidy, J. 1865 A, p. 119.
Cope, E. D. 1869 M, p. 119.
Zittel, K. A. 1890 A, p. 727.

Cœlosaurus antiquus Leidy.

Leidy, J. 1865 A, p. 119, pl. iii, fig. 3; pl. xvii, figs. 7–11.
Cope, E. D. 1869 B, p. 737.
1869 M, pp. 118, 119.
1875 E, p. 249.
Cretaceous; New Jersey.

CREOSAURUS Marsh. Type *C. atrox* Marsh.

Marsh, O. C. 1878 B, p. 243.
1879 B, p. 90.
1884 B.
1896 C, p. 163.
Nicholson and Lydekker 1889 A, p. 1168.
Williston, S. W. 1878 A, p. 46.
Zittel, K. A. 1890 A, p. 725.

Creosaurus atrox Marsh.

Marsh, O. C. 1878 B, p. 243, figs. 1, 2.
King, C. 1878 A, p. 347.
Marsh, O. C. 1879 B, p. 90, pl. x.
1884 B, pls. ix, xi.
1896 C, p. 163, pl. xii.
Jurassic; Colorado.

ANTRODEMUS Leidy. Type *A. valens* Leidy.

Leidy, J. 1870 E, p. 3.
1873 B, p. 267. (Poicilopleuron.)
Marsh, O. C. 1879 B, p. 91. (Labrosaurus, type *Allosaurus lucaris* Marsh.)
1884 B, pl. ix. (Labrosaurus.)
1896 C, p. 163. (Labrosaurus.)
Riggs, E. S. 1900 A, p. 233.
Zittel, K. A. 1890 A, p. 727. (Labrosaurus.)

The identification of Marsh's *Labrosaurus* with Leidy's *Antrodemus* and of *L. ferox* with *A. valens* has been made by Mr. F. A. Lucas, of the U. S. National Museum.

Antrodemus lucaris (Marsh).

Marsh, O. C. 1878 B, p. 242. (Allosaurus.)
King, C. 1878 A, p. 346. (Allosaurus.)
Marsh, O. C. 1879 B, p. 91. (Labrosaurus.)
Jurassic; Colorado.

Antrodemus medius (Marsh).

Marsh, O. C. 1888 A, p. 93. (Labrosaurus.)
Jurassic (Potomac); Maryland.

Antrodemus sulcatus (Marsh).

Marsh, O. C. 1896 C, p. 270, pl. xiii, fig 1. (Labrosaurus.)
Formation and locality not given.

Antrodemus valens Leidy.

Leidy, J. 1870 E, p. 3. [Poicilopleuron (Antrodemus).]

Leidy, J. 1873 B, pp. 267, 338 (Poicilopleuron); pl. xv, figs. 16–18 (Antrodemus).

Marsh, O. C. 1884 B, p. 333, pl. ix. (Labrosaurus ferox.)

Marsh, O. C. 1896 C, p. 163 (Allosaurus); pl. xiii, figs. 2–4 (Labrosaurus ferox).

Walcott, C. D. 1900 A, p. 23. (Labrosaurus ferox.)

Zittel, K. A. 1890 A, p. 724. (Megalosaurus.)

Jurassic; Colorado.

PARONYCHODON Cope. Type *P. lacustris* Cope.

Cope, E. D. 1876 H, p. 256.
1876 I, p. 345.

Osborn, H. F. 1893 B, p. 320. (Syn.? of Meniscoëssus.)

The position of this genus is very doubtful.

Paronychodon lacustris Cope.

Cope, E. D. 1876 H, p. 256.
1876 I, p. 350.
1877 G, p. 572.

Cretaceous (Laramie); Montana.

ZAPSALIS Cope. Type *Z. abradens* Cope.

Cope, E. D. 1876 I, p. 344.

A genus of doubtful position.

Zapsalis abradens Cope.

Cope, E, D. 1876 I, p. 345
1877 G, p. 572.

Cretaceous (Laramie); Montana.

PALÆOCTONUS Cope. Type *P. appalachianus* Cope.

Cope, E. D. 1877 E, p. 182.
1893 A, p. 15.

A genus of uncertain position.

Palæoctonus appalachianus Cope.

Cope, E. D. 1877 E, p. 182.
1877 X.
1878 FF.
1893 A, p. 15, pl. ii, figs. 2, 3.

Triassic; Pennsylvania.

Palæoctonus dumblianus Cope.

Cope, E. D. 1893 A, p. 16, pl. ii, figs. 5, 6.

Triassic; Texas.

Palæoctonus orthodon Cope.

Cope, E. D. 1893 A, p. 15, pl. ii, fig. 1.

Triassic; Texas.

SUCHOPRION Cope. Type *S. cyphodon* Cope.

Cope, E. D. 1877 E, p. 185.

A genus of uncertain position.

Suchoprion aulacodus Cope.

Cope, E. D. 1878 E, p. 184. (Palæoctonus.)
1878 D, p. 232.

Triassic; Pennsylvania.

Suchoprion cyphodon Cope.

Cope, E. D. 1877 E, p. 185.
1878 FF.

Triassic; Pennsylvania.

Suchoprion sulcidens Cope.

Cope, E. D. 1878 FF. (No description).

Triassic; Pennsylvania.

TROÖDON Leidy. Type *T. formosus* Leidy.

Leidy, J. 1856 F, p. 72.

Cope, E. D. 1869 M, p. 120.

Leidy, J. 1856 C, p. 119.
1860 A, p. 147.

Zittel, K. A. 1890 A, p. 727.

A genus of doubtful position.

Troödon formosus Leidy.

Leidy, J. 1856 F, p. 72.

Cope, E. D. 1869 M, p. 120.
1874 C, p. 26.
1875 E, p. 248.
1877 G, p. 572.

Leidy, J. 1856 C, p. 119.
1860 A, p. 147, pl. ix, figs. 53–55.

Cretaceous (Laramie); Montana.

ZATOMUS Cope. Type *Z. sarcophagus* Cope.

Cope, E. D. 1871 M, p. 211
1875 V, p. 35.

The position of this genus is doubtful.

Zatomus sarcophagus Cope.

Cope, E. D. 1871 M, p. 211.
1875 V, p. 35.

Emmons, E. 1857 A, p. 62, fig. 34. (No name).

Mesozoic; North Carolina.

ANCHISAURIDÆ.

Marsh, O. C. 1885 A, p. 169.
Gadow, H. 1897 A, p. 204.
Günther, A. C. 1886 A, p. 443.
Lydekker, R. 1888 B, p. 174.
1890 A, p. 246.
Marsh, O. C. 1882 A, p. 84. (Amphisauridæ.)
1884 B, p. 338. (Amphisauridæ.)
1884 G. (Amphisauridæ.)
Marsh, O. C. 1885 D, p. 765.
1895 C, p. 493.
1896 C, pp. 147, 239.
1896 D, p. 206.
Nicholson and Lydekker 1889 A, p. 1186.
Zittel, K. A. 1890 A, p. 730.

ANCHISAURUS Marsh. Type *Megadactylus polyzelus* Hitch.

Marsh, O. C. 1885 A. (To replace Amphisaurus Marsh, preoccupied.)
Baur, G. 1883 A, p. 443. (Amphisaurus.)
1884 B, p. 447. (Amphisaurus.)
Cope, E. D. 1869 M, p. 122 A. (Megadactylus.)
1870 S. (Megadactylus.)
1877 Q, p. 6. (Megadactylus.)
1878 I, p. 236. (Megadactylus.)
1885 O, p. 705. Megadactylus.)
1887 C, p. 368. (Megadactylus.)
Dames, W. 1884 A. (Amphisaurus.)
Marsh, O. C. 1882 A, p. 84. (Amphisaurus, to replace Megadactylus, preoccupied.)
1889 C, p. 331.
1893 F, p. 151.
1893 G.
1895 C, p. 493.
1896 C, p. 147.
Nicholson and Lydekker 1889 A, pp. 1166, 1170.
Woodward, A. S. 1898 B, p. 196.
Zittel, K. A. 1890 A, p. 730.

Anchisaurus colurus Marsh.

Marsh, O. C. 1891 E, p. 267.
Fürbringer, M. 1900 A, p. 354, fig. 130.
Marsh, O. C. 1892 F, p. 543, pls. xv, xvi.
1893 C, p. 169, pl. vi.
1893 F, p. 151, fig. 1.
1895 C, pl. x, fig. 1.
1896 C, p. 148, pl. ii, figs. 1-3; pl. iii, figs. 1, 2.
1896 D, pl. i, fig. 1.
Woodward, A. S. 1898 B, p. 198, fig. 119.
Triassic; Connecticut.

Anchisaurus polyzelus (Hitch.).

Hitchcock, E. 1865 A, p. 39. (Megadactylus.)
Cope, E. D. 1869 M, p. 122 E, pl. xiii. (Megadactylus.)
1870 A. (Megadactylus.)
Hitchcock, E. 1858 A, p. 187. (No name.)
Marsh, O. C. 1892 F, p. 546, pls. xvi, xvii. (Anchisaurus.)
1896 C, p. 147, pl. iii, figs. 4, 5. (Anchisaurus.)
Triassic; Massachusetts.

Anchisaurus solus Marsh.

Marsh, O. C. 1892 F, p. 545.
1893 C, p. 169.
1893 F, p. 151.
1896 C, p. 149.
Triassic; Connecticut.

AMMOSAURUS Marsh. Type *Anchisaurus major* Marsh.

Marsh, O. C. 1891 E, p. 267.
1892 F, p. 545.
1893 G, p. 170.
1895 C, p. 493.
1896 C, p. 150.

Ammosaurus major Marsh.

Marsh, O. C. 1889 C, p. 331. (Anchisaurus.)
1891 E, p. 331, fig. 1.
1892 F, p. 546, pls. xvi, xvii.
1896 C, p. 147, pl. iii, figs. 3, 6.
Zittel, K. A. 1890 A, p. 730, fig. 636. (Anchisaurus.)
Triassic; Connecticut.

BATHYGNATHUS Leidy. Type *B. borealis* Leidy.

Leidy, J. 1854 H.
Cope, E. D. 1867 D.
1870 S.
Huxley, T. H. 1869 A.
Leidy, J. 1855 A.
1868 F. p. 199.
Marsh, O. C. 1882 A, p. 84.
1892 C, p. 240.
1895 C, p. 493.
Meyer, H. 1855 A, p. 161.
Nicholson and Lydekker 1889 A, p. 1166.
Owen, R. 1860 A, p. 163.
Zittel, K. A. 1890 A, p. 731.

Bathygnathus borealis Leidy.

Leidy, J. 1854 H, pl. xxxiii.
Cope, E. D. 1869 M, p. 119.
Dana, J. D. 1896 A, p. 754, fig. 1180.
Dawson, J. W. 1868 A, p. 119, fig. 29.
1878 A, p. 119, fig. 29.
Lea, I. 1856 B, p. 123.
1858 A.
Leidy, J. 1855 A.
1881 A.
Lesley, J. P. 1889 A, p. 80, figures.
Owen, R. 1860 E, p. 252.
1876 B, p. 359, fig. 9.
Triassic; Prince Edwards Island.

CLEPSYSAURUS Lea. Type *C. pennsylvanicus* Lea.

Lea, I. 1851 B.
Cope, E. D. 1869 M, p. 122 A
1870 I, p. 444.
1870 S.
1871 M, p. 210.
Emmons, E. 1856 A, p. 298. (Clepsisaurus.)
Lea, I. 1853 A, p. 196.
Leidy, J. 1857 B, p. 150.
Marsh, O. C. 1895 C, p. 493.
Nicholson and Lydekker 1889 A, p. 1166.
Zittel, K. A. 1890 A, p. 731.

Clepsysaurus pennsylvanicus Lea.

Lea, I. 1851 B.
Amer. Jour. Science 1852 B.
Cope, E. D. 1866 D, p. 249.
1869 B, p. 733.
1869 M, p. 122 A.
1871 M, p. 210.
1875 V, p. 35, pl. viii, fig. 4.
Dana, J. D. 1896 A, p. 754, fig. 1181.
Emmons, E. 1856 A, p. 299, figs. A, B, and 21.
1857 A, p. 67, in part. (Clepsisaurus.)
1860 A, p. 175, figs. 158^{1-5}, 160^{2}. (Clepsisaurus.)
Lea, I. 1851 A. (No generic name.)
1853 A, p. 199, pls. xvii-xix.
1856 B.
1858 A.
Leidy, J. 1854 H, p. 327.
1855 A.
Lesley, J. P. 1889 A, p. 133, figure.
Meyer, H. 1855 A, p. 161.
Wheatley, C. M. 1861 A, p. 44.
Triassic; Pennsylvania, New Jersey, North Carolina.

Clepsysaurus veatleianus Cope.

Cope, E. D. 1877 E, p. 184.
1878 F F. (C. wheatleianus.)
Lesley, J. P. 1889 A, p. 134.
Triassic; Pennsylvania.

THECODONTOSAURUS Riley and Stutchbury.

Riley and Stutchbury 1838 A, p. 352.
Cope, E. D. 1877 E, p. 182. (Palæosaurus.)
Huxley, T. H. 1870 D, p. 43. (Thecodontosaurus, Palæosaurus.)
Lydekker, R. 1888 B, p. 174.
1890 A, p. 246.
Marsh, O. C. 1895 C, p. 493.
Owen, R. 1842 A, p. 154. (Thecodontosaurus, Palæosaurus.)
1845 B, p. 266.
Riley and Stutchbury 1838 A, p. 352. (Palæosaurus, with species cylindrodon and platyodon.)
Seeley, H. G. 1895 C. (Thecodontosaurus, Palæosaurus.)
Zittel, K. A. 1890 A, p. 721 (Thecodontosaurus); p. 722 (Palæosaurus).

Thecodontosaurus and *Palæosaurus* of Riley and Stutchbury are here united. In case *Palæosaurus* of these authors is distinct, as seems probable, it must be provided with a new name, since *Palæosaurus* was used by Geoffroy in 1831 in another sense.

Thecodontosaurus fraserianus Cope.

Cope, E. D. 1878 D, p. 232. (Palæosaurus.)
1878 FF.
Triassic; Pennsylvania.

Thecodontosaurus gibbidens Cope.

Cope, E. D. 1878 D, p. 231.
1878 FF.
Triassic; Pennsylvania.

ARCTOSAURUS Adams. Type *A. osborni* Adams.

Adams, A. L. 1875 A, p. 177.
1877 A.
Lydekker, R. 1890 A, p. 250.
Marsh, O. C. 1895 C, p. 493.
1896 C, p. 152.
Nicholson and Lydekker 1889 A, p. 1166.
Zittel, K. A. 1890 A, p. 731.
The position of this genus is doubtful.

Arctosaurus osborni Adams.

Adams, A. L. 1875 A, p. 177, figs. A-D.
1877 A.
Lydekker, R. 1889 L, p. 352, figs. A-D.
1890 A, p. 251, fig. 59, A-D.
Mesozoic; Bathurst Island.

CŒLURIDÆ.

Marsh, O. C. 1881 B. (Cœluria, Cœluridæ.)
Cope, E. D. 1889 R, p. 864.
Lydekker, R. 1888 B, p. 155.
1890 A, p. 243.
Marsh, O. C. 1881 E, p. 423. (Cœluria, Cœluridæ.)
1882 A, p. 85. (Cœluria, Cœluridæ.)
1884 B, p. 338. (Cœluria, Cœluridæ.)
1884 G. (Cœluria, Cœluridæ.)
Marsh, O. C. 1885 D, p. 765. (Cœluria, Cœluridæ.)
1895 C, p. 494. (Cœluria, Cœluridæ.)
1896 C, p. 240. (Cœluria, Cœluridæ.
1896 D, p. 206.
Menzbier, M. 1887 A. (Cœluria.)
Nicholson and Lydekker 1889 A, p. 1170.
Steinmann and Döderlein 1890 A, p. 661
Zittel, K. A. 1890 A p. 731.

Cœlurus Marsh. Type *C. fragilis* Marsh.

Marsh, O. C. 1879 H, p. 504.
Cope, E. D. 1887 A, p. 221.
1887 C.
Lydekker, R. 1888 B, p. 155.
1889 H.
Marsh, O. C. 1881 B.
1884 B.
1896 C, p. 155.
Nicholson and Lydekker 1889 A. p. 1170.
Seeley, H. G. 1887 A.
1888 C, p. 83.
Vetter, B. 1885 A. p. 119.
Zittel, K. A. 1890 A, p. 731.

Cœlurus agilis Marsh.

Marsh, O. C. 1884 B, p. 335, pl. x, figs. 3*a*, 3*b*.
1896 C, pl. x, figs. 3, 4.
Jurassic; Colorado.

Cœlurus fragilis Marsh.

Marsh, O. C. 1879 H, p. 504.
Cope, E. D. 1881 BB, p. 413. (Amphicœlias fragillissimus a synonym?)
1887 C, p. 369.
Marsh, O. C. 1881 B, pl. x.
1884 B, p. 340, pls. xi, xiii.
1896 C, p. 155, pl. vii.
Seeley, H. G. 1888 C, p. 5.
Zittel, K. A. 1890 A, p. 731, figs. 637-640.
Jurassic; Wyoming.

Cœlurus gracilis Marsh.

Marsh, O. C. 1888 A, p. 94.
Zittel, K. A. 1890 A, p. 732.
Jurrassic (Potomac); Maryland.

Cœlophysis Cope. Type not indicated.

Cope, E. D. 1889 N.
Lydekker, R. 1888 B, p. 155. (Tanystropheus.)
Cope, E. D. 1887 A, p. 221. (Tanystropheus.)
1889 N.
Zittel, K. A. 1890 A, p. 733. (Tanystropheus).
Triassic; New Mexico.

Cœlophysis bauri Cope.

Cope, E. D. 1887 C, p. 368. (Cœlurus.)
1887 A, p. 226. (Tanystropheus.)
1889 N.
Zittel, K. A. 1890 A, p. 733. (Tanystropheus.)
Triassic; New Mexico.

Cœlophysis longicollis Cope.

Cope, E. D. 1887 C, p. 368. (Cœlurus.)

Cœlophysis willistoni Cope.

Cope, E. D. 1887 A, p. 227. (Tanystropheus.)
1889 N.
Zittel, K. A. 1890 A, p. 733. (Tanystropheus.)
Triassic; New Mexico.

Tichosteus Cope. Type *T. lucasanus* Cope.

Cope, E. D. 1877 F, p. 194.
1878 M, p. 84.
Zittel, K. A. 1890 A, p. 732.
A genus of uncertain position.

Tichosteus æquifacies Cope.

Cope, E. D. 1878 H, p. 392.
Jurassic; Colorado.

Tichosteus lucasanus Cope.

Cope, E. D. 1877 F, p. 194.
1880 Q.
Osborn, H. F. 1898 J, p. 227.
Jurassic; Colorado.

CERATOSAURIDÆ.

Marsh, O. C. 1884 B, p. 330.
1884 E.
1884 G. (Ceratosauria, Ceratosauridæ.)
1885 D. (Ceratosauria, Ceratosauridæ.)
1892 H.
1895 C, p. 494. (Ceratosauria, Ceratosauridæ.)
1896 C, p. 240. (Ceratosauria, Ceratosauridæ.)
Marsh, O. C. 1896 D, p. 207. (Ceratosauria, Ceratosauridæ.)
Lydekker, R. 1888 B, p. 157. (Megalosauridæ, in part.)
Steinmann and Döderlein 1890 A, p. 660.
Zittel, K. A. 1890 A, p. 727.

Ceratosaurus Marsh. Type *C. nasicornis* Marsh.

Marsh, O. C. 1884 B.
Baur, G. 1884 B, p. 448.
1890 C, p. 301.
1891 D, p. 446.
Cope, E. D. 1892 K, p. 244. (Megalosaurus.)
Dollo, L. 1884 B.
Fürbringer, M. 1888 A, p. 1609.
Gaudry, A. 1890 C, p. 252.
Lydekker, R. 1888 A, p. 58.
1888 B, p. 157.
1889 C, p. 45.
1893 B, p. 302. (Megalosaurus.)
1893 E, p. 138. (Megalosaurus?.)
Marsh, O. C. 1884 E.
1889 B, p. 330.
1892 H, p. 347, pl. vii.

Marsh, O. C. 1893 F, p. 152.
1893 I, p. 437.
1895 C, p. 494.
1896 C, p. 156.
1896 D, p. 203.
1897 C, p. 503.
Natural Science 1893 A, p. 138.
Nicholson and Lydekker 1889 A, p. 1168.
Seeley, H. G. 1887 A, p. 225.
Steinmann and Döderlein 1890 A, p. 660.
Vetter, B. 1885 A, p. 111.
Woodward, A. S. 1898 B, p. 199.
Zittel, K. A. 1890 A, p. 727.

Ceratosaurus nasicornis Marsh.

Marsh, O. C. 1884 B, p. 330, pls. viii-xi.
Cope, E. D. 1892 K, P. 245. (Megalosaurus.)
1892 Z, p. 18.
Marsh, O. C. 1884 E, fig. 1.
1892 H, p. 347, pl. vii.
1893 F, p. 152, pl. vi.
1895 C, p. 489, pl. x, fig. 5; text figs. 9, 10.
1896 C, p. 156, pls. viii-x, fig. 1.; pl. xiv, text figs. 1, 64, 65.
1896 D, p. 202, pl. i, fig. 5; text figs. 9, 10.
1897 C, p. 503, pl. xxv, text fig. 60.
Menzbier, M. 1887 A, p. 533.
Walcott, C. D. 1900 A, p. 23.
Woodward, A. S. 1898 B, p. 200, fig. 120.
Zittel, K. A. 1890 A, p. 727, figs. 629-635.
Jurassic; Colorado.

ORNITHOMIMIDÆ.

Marsh, O. C. 1890 A, p. 85.
1890 C, p. 425.
1895 C, p. 494.
Marsh, O. C. 1896 C, pp. 203, 240.
1896 D, p. 207.
Zittel, K. A. 1896 D, p. 207.

ORNITHOMIMUS Marsh. Type *O. velox* Marsh.

Marsh, O. C. 1890 A, p. 84.
Baur, G. 1890 C, p. 303.
Gadow, H. 1897 A, p. 205.
Marsh, O. C. 1895 C, p. 494.
1896 C, p. 204.
1897 C, p. 518.
Zittel, K. A. 1890 A, p. 767.

Ornithomimus grandis Marsh.

Marsh, O. C. 1890 A, p. 85.
1892 E, p. 452.
1896 C, p. 206.
Zittel, K. A. 1890 A, p. 767.
Cretaceous (Laramie); Colorado.

Ornithomimus minutus Marsh.

Marsh, O. C. 1892 E, p. 452.
1896 C, p. 206.
Cretaceous (Laramie); Colorado.

Ornithomimus sedens Marsh.

Marsh, O. C. 1892 E, p. 451.
1896 C, p. 205, figs. 49-52.
Cretaceous (Laramie); Colorado.

Ornithomimus tenuis Marsh.

Marsh, O. C. 1890 A, p. 85.
Cretaceous (Laramie); Colorado.

Ornithomimus velox Marsh.

Marsh, O. C. 1890 A, p. 84, pl. i, figs. 1-3.
Cannon, J. L. 1890 A.
Dana, J. D. 1896 A, p. 847, fig. 1416.
Marsh, O. C. 1896 C, p. 205, pl. lviii, figs. 1-4.
1897 C, pp. 518, 527, figs. 83-86.
Zittel, K. A. 1890 A, p. 766, figs. 677, 678.
Cretaceous (Laramie); Colorado.

HALLOPIDÆ.

Marsh, O. C. 1881 E, p. 423. (Hallopoda, Hallopodidæ.)
Cope, E. D. 1883 J, p. 98. (Hallopoda.)
Günther, A. 1886 A, p. 443.
Marsh, O. C. 1882 A, p. 85. (Hallopoda, Hallopodidæ.)
1884 B, p. 338.
1885 D.
Marsh, O. C. 1890 B.
1895 C, p. 494. (Hallopoda, Hallopidæ.)
1896 C, p. 240. (Hallopoda, Hallopidæ.)
1896 D, p. 207. (Hallopoda, Hallopidæ.)
Nicholson and Lydekker 1889 A, p. 1169.
Zittel, K. A. 1890 A, p. 693 (Hallopoda); p. 736 (Hallopidæ).

HALLOPUS Marsh. Type *Nanosaurus victor* Marsh.

Marsh, O. C. 1881 E, p. 422.
Baur, G. 1890 E.
Marsh, O. C. 1884 B, p. 338.
1895 C, pp. 488, 494.
1896 C, p. 153.
1896 D, p. 201.
Nicholson and Lydekker 1889 A, p. 1169.
Vetter, B. 1885 A, p. 119.
Zittel, K. A. 1890 A, p. 736.

Hallopus victor Marsh.

Marsh, O. C. 1877 D, p. 255. (Nanosaurus.)
Marsh, O. C. 1881 E, p. 422.
1890 B, p. 417, figure.
1891 F, p. 337.
1895 C, p. 484, text figs. 4, 5.
1896 C, p. 153, pl. vi, text figs. 3, 59, 60.
1896 D, p. 199, figs. 4, 5.
1897 C, p. 482, figs. 25, 26.
Woodward, A. S. 1898 B, p. 200.
Zittel, K. A. 1890 A, p. 736, fig. 643.
Jurassic; Colorado.

Suborder ORTHOPODA Cope.

Cope, E. D. 1866 E, p. 317.
Baur, G. 1887 A, p. 487. (Orthopoda.)
1887 C, p. 101. (Orthopoda.)
1890 B. (Orthopoda.)
1891 A. (Iguanodontia.)
1891 B. (Orthopoda.)
1891 C, p. 354. (Iguanodontia.)
1891 D, p. 451. (Iguanodontia.)
Cope, E. D. 1869 M, p. 90. (Orthopoda.)
1871 B, p. 234. (Orthopoda.)
1882 Q. (Orthopoda.)
1883 J, p. 98. (Orthopoda.)
1889 R, p. 864. (Orthopoda.)
1891 N, p. 43. (Orthopoda.)
1898 B, p. 68. (Orthopoda.)
Dollo, L. 1888 B. (Iguanodontia.)
Fürbringer, M. 1888 A.
Fürbringer, M. 1900 A.
Gadow, H. 1897 A, p. 204.
1898 A, p. 22.
Lydekker, R. 1888 B, p. 175. (Ornithopoda.)
Marsh, O. C. 1894 E, p. 90. (Predentata.)
1895 C, p. 496. (Predentata.)
1896 C, pp. 186, 242. (Predentata.)
1896 D, p. 209. (Predentata.)
Nicholson and Lydekker 1889 A, p. 1152. (Ornithopoda.)
Osborn, H. F. 1900 G, p. 786. (Iguanodontia.)
Seeley, H. G. 1888 B. (Ornithischia.)
1888 G. (Ornithischia.)
Steinmann and Döderlein 1890 A, p. 663. (Orthopoda.)
Zittel, K. A. 1890 A, pp. 692, 786. (Orthopoda.)

Superfamily STEGOSAUROIDEA nom. nov.

This group is called by the following writers the *Stegosauria*.

Baur, G. 1883 A, p. 435.
1884 A.
Cope, E. D, 1880 R.
1883 J, p. 98.
Dollo, L. 1892 C, p. 11. ("Stegosauriens.")
Fürbringer, M. 1888 A.
1900 A, p. 348.
Gadow, H. 1897 A, p. 205. (Stegosauri.)
1898 A, p. 22. (Stegosauri,)
Haeckel, E. 1895 A, p. 387. (Pachypoda.)
Krause, W. 1881 A.
Lydekker, R. 1888 B, p. 175.
1889 C, p. 43.
Marsh, O. C. 1877 F, p. 513.
1878 G, p. 224.
1880 C.
1881 A.
Marsh, O. C. 1882 A, p. 83.
1881 E, p. 423.
1884 G.
1885 D.
1887 C.
1888 D.
1889 B, p. 326.
1891 D, p. 181.
1891 J, p. 387.
1895 C, p. 496.
1896 C, pp. 193, 242.
1896 D, p. 209.
1897 C, p. 498.
Science 1885 B.
Steinmann and Döderlein 1890 A, p. 663.
Vetter, B. 1885 A, p. 117.
Wiedersheim, R. 1881 A.
Zittel, K. A. 1890 A, pp. 693, 740.

STEGOSAURIDÆ.

Marsh, O. C. 1880 C, p. 259.
Cope, E. D. 1898 B, p. 70. (Hypsirhophidæ.)
Lydekker, R. 1888 B, p. 176. (Omosauridæ.)
1889 L.
1890 A, p. 251.
Marsh, O. C. 1881 E, p. 423.
1882 A, p. 83.
1884 B, p. 336.
Marsh, O. C. 1884 G.
1885 D, p. 764.
1895 C, p. 496.
1896 C, p. 242.
1896 D, p. 209.
Nicholson and Lydekker 1889 A, p. 1161.
Steinmann and Döderlein 1890 A, p. 664.
Zittel, K. A. 1890 A, p. 744.

STEGOSAURUS Marsh. Type *S. armatus* Marsh.

Marsh, O. C. 1877 F, p. 513.
Cope, E. D. 1878 H, p. 389. (Hypsirophus.)
1878 R. (Hypsirophus, type *H. discurus*.)
1888 Z. (Hypsirophus.)
1892 Z, p. 18. (Hypsirophus.)
Koken, E. 1897 A, p. 51.
Krause, W. 1881 A.
Lydekker, R. 1888 B, p. 177. (Omosaurus, Stegosaurus.)
1889 F, p. xi.
Lydekker, R. 1890 A, p. 253.
1893 B, p. 302. (Hypsirophus.)
Marsh, O. C. 1880 C, p. 253.
1881 A.
1883 A, p. 85.
1887 C.
1888 D.
1889 B, p. 327.
1891 D.
1891 J.

Marsh, O. C. 1892 G, p. 174.
1893 I, p. 438. (Stegosaurus, Hypsirophus.)
1895 C, p. 497.
1896 C, pp. 186, 242.
1897 C, p. 498.
Nicholson and Lydekker 1889 A, p. 1161.
Owen, R. 1875 C, p. 45. (Omosaurus.)
Steinmann and Döderlein 1890 A, p. 664.
Woodward, A. S. 1898 B, p. 210.
Zittel, K. A. 1890 A, p. 726 (Hypsirophus); p. 744. (Stegosaurus).

Stegosaurus affinis Marsh.

Marsh, O. C. 1881 A, p. 169.
1896 C, p. 191.
Jurassic; Wyoming?

Stegosaurus armatus Marsh.

Marsh, O. C. 1877 F, p. 513.
King, C. 1878 A, p. 346.
Lydekker, R. 1888 B, p. 179, fig. 32.
Marsh, O. C. 1879 H, p. 504.
1880 C, p. 258 (part), pl. vi (except figs. 4, 5, which belong to Diplodocus).
1891 D, p. 179.
1896 C, p. 188.
Jurassic; Colorado.

Stegosaurus discurus (Cope).

Cope, E. D. 1878 R. (Hypsirophus.)
1878 H, p. 389. (Hypsirophus.)
Jurassic; Colorado.

Stegosaurus duplex Marsh.

Marsh, O. C. 1887 C, p. 416.
1881 A, p. 168 (pelvis), pl. vi, fig. 1. (S. ungulatus.)
1888 D, p. 14.
1891 D, p. 179.
1896 C, p. 193.
Jurassic; Wyoming.

Stegosaurus seeleyanus (Cope).

Cope, E. D. 1879 R. (Hypsirophus.)
Jurassic; Colorado.

Stegosaurus stenops Marsh.

Marsh, O. C. 1887 C, p. 114, pl. vi.
Cope, E. D. 1892 Z, p. 18. (Hypsirophus.)
Lydekker, R. 1888 B, p. 176, fig. 31.
Marsh, O. C. 1888 D, pl. i.
1890 C, p. 426, pl. vii, fig. 2.
1891 D, p. 179.
1896 C, p. 186, pl. xliii, pl. xlvii, fig. 3.
1897 C, p. 499, fig. 52.
Woodward, A. S. 1898 B, p. 212, fig. 131.
Zittel, K. A. 1890 A, p. 745, figs. 650, 654.
Jurassic; Colorado.

Stegosaurus sulcatus Marsh.

Marsh, O. C. 1887 C, p. 415, pl. viii, figs. 4-6.
1888 D, pl. ii, figs. 4-6.
1896 C, p. 193, pl. l, figs. 4-6.
Jurassic; Colorado?

Stegosaurus ungulatus Marsh.

Marsh, O. C. 1879 H, p. 504.
Cope, E. D. 1880 R.
1881 BB, pp. 254, 340. (Hypsirophus.)
Fürbringer, M. 1900 A, p. 351, figs. 121, 126.
Geinitz and Deichmüller 1882 A, p. 15.
Hutchison, H. N. 1893 A, p. 110, pl. xi.
Lydekker, R. 1893 B, p. 304, fig. 3. (Hypsirophus.)
Marsh, O. C. 1881 A (part), pls. vi-viii (except fig. 1, pl. vi, which belongs to S. duplex).
1887 C, p. 415, pls. vii, viii.
1888 D, pl. ii, figs. 1-3.
1891 D, pl. ix.
1891 J, pl. xi.
1892 G, p. 176, pl. iv.
1894 E, pl. vii, fig. 6.
1896 C, p. 188, pl. xliv, figs. 1, 3, 4; pls. xlv-xlvii; pl. xlviii, figs. 1, 2; pl. xlix; pl. l, figs. 1-3; pl. lii.
1896 D, pl. i, fig. 8.
1897 C, p. 498, pl. xxii, text figs. 54-57.
Woodward, A. S. 1898 B, p. 211, fig. 130.
Zittel, K. A. 1890 A, p. 745, figs. 651-653, 655-660.
Jurassic; Wyoming.

DIRACODON Marsh. Type *D. laticeps* Marsh.

Marsh, O. C. 1881 E, p. 421.
1887 C, p. 416.
1888 D, p. 14.
1891 D, p. 181.
1895 C, p. 497.
1896 C, p. 193.
Nicholson and Lydekker 1889 A, p. 1163.
Zittel, K. A. 1890 A, p. 748.

Diracondon laticeps Marsh.

Marsh, O. C. 1881 E, p. 421.
1887 C, p. 416, pl. ix.
1888 D, pl. iii.
1896 C, p. 193, pl. li.
Jurassic; Wyoming.

PRICONODON Marsh. Type *P. crassus* Marsh.

Marsh, O. C. 1888 A, p. 93.
1896 C, p. 187.
Zittel, K. A. 1890 A, p. 748.

Priconodon crassus Marsh.

Marsh, O. C. 1888 A, p. 93, figs. 3-9.
1896 C, pl. xliv, fig. 2.
Walcott, C. D. 1900 A, p. 23.

PALÆOSCINCUS Leidy. Type *P. costatus* Marsh.

Leidy, J. 1856 F, p. 72.
Cope, E. D. 1869 M, p. 99.
Leidy, J. 1856 C, p. 118.
Marsh, O. C. 1889 B, p. 328.
1892 G, p. 173.
1895 C, p. 497.
1896 C, p. 225.
Zittel, K. A. 1890 A, p. 748.
The affinities of this genus are uncertain.

Palæoscincus costatus Leidy.

Leidy, J. 1856 F, p. 72.
Cope, E. D. 1869 M, p. 99.
Cope, E. D. 1874 C, p. 26.
1875 E, p. 248.
1877 G, p. 572.
Leidy, J. 1856 C, p. 118.
1860 A, p. 146, pl. ix, figs. 49-61; pl. xi, fig 8.
Marsh, O. C. 1896 C, p. 225.
Cretaceous (Laramie); Montana.

Palæoscincus latus Marsh.

Marsh, O. C. 1892 G, p. 173, pl. iii, fig. 3.
1896 C p. 225, pl. lxxxv.
Cretaceous (Laramie); Wyoming.

DYSTROPHÆUS Cope. Type *D. viæmalæ* Cope.

Cope, E. D. 1877 B, p. 579.
1877 K, p. 31.
Marsh, O. C. 1895 C, p. 497.
Zittel, K. A. 1890 A, p. 749.
A genus of uncertain relationships.

Dystrophæus viæmalæ Cope.

Cope, E. D. 1877 B, p. 581.
1877 K, p. 34, text fig. 3.
1878 M, p. 84.
Marsh, O. C. 1896 C, p. 152.
Triassic?; Utah.

HYPSIBEMA Cope. Type *H. crassicauda* Cope.

Cope, E. D. 1869 I.
1869 M, p. 122G.
1871 M, p. 211.
1875 V, p. 36.
Zittel, K. A. 1890 A, p. 748.
A genus of uncertain position.

Hypsibema crassicauda Cope.

Cope, E. D. 1869 I.
1869 M, p. 122 G, pl. i, figs. 14, 15.
1871 M, p. 211.
1875 E, p. 247.
1875 V, p. 36, pls. vi, vii.
Nopcsa, F. B. 1899 A, p. 557.
Cretaceous; New Jersey.

NODOSAURIDÆ.

Marsh, O. C. 1890 C, p. 425.
1895 C, p. 497.
Marsh, O. C. 1896 C, p. 243.
1896 D, p. 210.

NODOSAURUS Marsh. Type *N. textilis* Marsh.

Marsh, O. C. 1889 E, p. 175.
1895 C, p. 497.
1896 C, p. 225.
Nicholson and Lydekker 1889 A, p. 1164.
Zittel, K. A. 1890 A, p. 754.

Nodosaurus textilis Marsh.

Marsh, O. C. 1889 E, p, 175, figure.
Lambe, L. M. 1899 A, p. 70. (Identification doubtful.)
Marsh, O. C. 1896 C, p. 225, pl. lxxv, fig. 5.
Cretaceous; Wyoming, British America.

Superfamily CERATOPSOIDEA nom. nov.

Dollo, L. 1892 C, p. 12. ("Ceratopsiens.")
Fürbringer, M. 1900 A, p. 348. (Ceratopsia.)
Gadow, H. 1897 A, p. 205. (Ceratopsia.)
1898 A. p. 23. (Ceratopsia.)
Marsh, O. C. 1890 C, p. 418. (Ceratopsia.)
Marsh, O. C. 1895 C, p. 497. (Ceratopsia.)
1896 C, p. 243. (Ceratopsia.)
1896 D, p. 210. (Ceratopsia.)
Zittel, K. A. 1890 A, p. 749. (Ceratopsia.)

CERATOPSIDÆ.

Marsh, O. C. 1888 C, p. 473.
Baur, G. 1891 A. (Agathaumidæ.)
1891 C, p. 354. (Agathaumidæ.)
Cannon, G. L. 1888 A, p. 215.
Cope, E. D. 1889 Q, p. 715. (Agathaumidæ.)
1889 R, p. 864. (Agathaumidæ.)
1891 N, p. 43. (Agathaumidæ.)
1898 B, p. 70. (Agathaumidæ.)
Marsh, O. C. 1889 G.
1890 A, p. 83.
1890 C, p. 418.
Marsh, O. C. 1890 F.
1891 B.
1891 C.
1891 G.
1892 A.
1895 C, p. 497.
1896 C, pp. 206, 248.
1896 D, p. 210.
1897 C, p. 509.
Nicholson and Lydekker 1889 A, p. 1163.
Steinmann and Döderlein 1890 A, p. 665.

AGATHAUMAS Cope. Type *A. sylvestris* Cope.

Cope, E. D. 1872 Q.
Amer. Geologist 1891 D.
Baur, G. 1891 A.
1891 C, p. 354.
1891 D, p. 450.
Cope, E. D. 1874 B, p. 444 (Agathaumas); pp. 448, 451 (Polyonax, type *P. mortuarius*).
1874 C, p. 17 (Agathaumas); p. 24 (Polyonax).
1875 E, p. 53 (Agathaumas); p. 63 (Polyonax).
1883 J, p. 99.
1888 Z. (Polyonax.)
1889 A. (Polyonax.)
1889 Q, p. 715. (Polyonax.)
1889 T, p. 906. (Polyonax.)
1891 N, p. 43.
1892 T, p. 758.
Marsh, O. C. 1893 I, p. 438.
1895 C, p. 497.
1896 C, p. 217. (Agathaumas; Polyonax.)
Osborn, H. F. 1893 B, p. 326.
Zittel, K. A. 1890 A, p. 751. (Agathaumas, Polyonax.)

Agathaumas mortuarius Cope.

Cope, E. D. 1874 B, pp. 448, 451. (Polyonax.)
1874 C, p. 25. (Polyonax.)
1875 E, p. 64, pl. ii, figs. 3–5; pl. iii, figs. 1–4. (Polyonax.)
1889 Q, p. 715.
Cretaceous (Laramie); Colorado.

Agathaumas sylvestris Cope.

Cope, E. D. 1872 Q.
Baur, G. 1891 A.
Cope, E. D. 1872 EE, p. 279.
1872 FF.
1873 A.
1874 B, pp. 442, 445.
1874 C, pp. 16, 18.
1875 E, pp. 54, 248, pls. iv, v; pl. vi, figs 1–4.
1878 S, p. 245.
1889 Q, p. 715.
1891 N, p. 43.
1892 T, p. 758.
Cretaceous (Laramie); Wyoming.

TRICERATOPS Marsh. Type *Ceratops horridus* Marsh.

Marsh, O. C. 1889 E, p. 173.
Ameghino, F. 1896 A, p. 391.
Amer. Geologist 1891 D.
Baur, G. 1891 A. (Agathaumus.)
1891 D, p. 450. (Agathaumus.)
Cope, E. D. 1889 T, p. 906. (Polyonax.)
Fürbringer, M. 1900 A, p. 350.
Lydekker, R. 1893 E, p. 138.
Marsh, O. C. 1889 G, p. 502.
1890 C, p. 418.
1890 F, p. 2.
1891 B, p. 167.
1891 C, p. 339.
1893 B.
1895 C, p. 497.
1896 C, p. 208.
1897 C, p. 510.
1898 B, p. 407.
Natural Science 1893 A.
Nicholson and Lydekker 1889 A, p. 1163.
Seeley, H. G. 1893 A, p. 438.
Steinmann and Döderlein 1890 A, p. 665.
Woodward, A. S. 1898 B, p. 213.
Zittel, K. A. 1890 A, pp. 750, 752. (Syn. ? of Monoclonius.)

Triceratops calicornis Marsh.

Marsh, O. C. 1898 A, p. 92.
Walcott, C. D. 1900 A, p. 23. (T. californis.)
Cretaceous; Wyoming.

Triceratops elatus Marsh.

Marsh, O. C. 1891 E, p. 265.
Cretaceous (Laramie); Wyoming.

Triceratops galeus Marsh.

Marsh, O. C. 1889 E, p. 174.
1897 C, p. 527.
Cretaceous (Laramie); Colorado.

Triceratops horridus Marsh.

Marsh, O. C. 1889 C, p. 334. (Ceratops.)
1889 E, p. 173.
1889 G, p. 502.
1890 C, p. 426, pl. vi, figs. 7–9.
1891 B, p. 178, pl. ix.
1891 G.
1896 C, p. 208, pl. lxix, figs. 10–12.
1897 C, p. 527.
Zittel, K. A. 1890 A, p. 752, fig. 665.
Cretaceous (Laramie); Wyoming, Colorado.

Triceratops obtusus Marsh.

Marsh, O. C. 1898 A, p. 92.
Walcott, C. D. 1900 A, p. 23.
Cretaceous (Laramie); Wyoming.

Triceratops prorsus Marsh.

Marsh, O. C. 1890 A.
Dana, J. D. 1896 A, p. 846, figs. 1411–1413.
Fürbringer, M. 1900 A, p. 351, figs. 123, 125, 128.
Hutchison, H. N. 1893 A, p. 116, pl. xi, text fig. 30.
Lydekker, R. 1893 B, p. 304, fig. 4. (Agathaumus.)
Marsh, O. C. 1890 C, p. 425, pl. v, figs. 3–5; pl. vi, figs. 5, 6.
1891 B, p. 177, pls. i–ix.
1891 C, p. 339, pl. xv.
1892 A, p. 84, pl. iii, fig. 6.
1894 E, pl. vii, fig. 4.
1895 C, pl. x, fig. 10.
1896 C, p. 208, pl. lix; pl. lx, fig. 4; pl. lxi, figs. 1–8; pl. lxiv; pl. lxviii; pl. lxix, figs. 1–3, 7–9; pls. lxv, lxvi; pl. lxvii, figs. 2–4.
1896 D, pl. i, fig. 11.
1897 C, p. 511, pl. xxvii; text figs. 75, 76.
Woodward, A. S. 1898 B, p. 213, fig. 132.
Cretaceous (Laramie); Wyoming.

Triceratops serratus Marsh.

Marsh, O. C. 1890 A, p. 81.
Dana, J. D. 1896 A, p. 846, fig. 1414.
Marsh, O. C. 1890 C, p. 425, pl. v, fig. 2; pl. vi, figs. 1–6.
1891 B, p. 177, pls. i, ii.
1892 A, p. 84, pl. iii.
1896 C, p. 208, pl. lx, fig. 3; pl. lxi, figs. 7, 9, 10.
1897 C, p. 512, fig. 78.
Woodward, A. S. 1898 B, p. 214, fig. 133.
Zittel, K. A. 1890 A, p. 752, figs. 661, 664.
Cretaceous (Laramie); Wyoming.

Triceratops sulcatus Marsh.

Marsh, O. C. 1890 C, p. 422.
Walcott, C. D. 1900 A, p. 23.
Cretaceous (Laramie); Wyoming.

Triceratops sp. indet.

Lambe, L. M. 1899 A, p. 70.
Cretaceous; British America.

STERRHOLOPHUS Marsh. Type *Triceratops flabellatus* Marsh.

Marsh, O. C. 1891 C, p. 340.
1895 C, p. 497.
1896 C, p. 216.
Woodward, A. S. 1898 B, p. 216.

Sterrholophus flabellatus Marsh.

Marsh, O. C. 1889 E, p. 174. (Triceratops.)
1889 G, p. 506, pl. xii. (Triceratops.)
1890 C, p. 425, pl. v, fig. 1; pl. vii, fig. 1. (Triceratops.)
Marsh, O. C. 1890 F, pl. i. (Triceratops.)
1891 B, p. 177, pls. i, vii, ix. (Triceratops.)
1891 C, p. 340.
1892 A, p. 84, pl. iii, fig. 2.
1896 C, p. 208, pl. lx, figs. 1, 2; pl. lxxvi, fig. 1; pl. lxxxi.
1897 C, p. 511, fig. 77.
Woodward, A. S. 1898 B, p. 215, fig. 134.
Zittel, K. A. 1890 A, p. 750, figs. 662, 663.
Cretaceous (Laramie); Wyoming.

TOROSAURUS Marsh. Type *T. latus* Marsh.

Marsh, O. C. 1891 E, p. 266.
1892 A, p. 81, pls. ii, iii.
1893 I, p. 438.
1895 C, p. 497.
1896 C, p. 214.
1898 B, p. 407.

Torosaurus gladius Marsh.

Marsh, O. C. 1891 E, p. 266.
Dana, J. D. 1896 A, p. 846, fig. 1415.
Marsh, O. C. 1892 A, p. 81, pl. ii.
1896 C, p. 215, pl. lxii, fig. 2; lxiii, text fig. 54.
Cretaceous (Laramie); Wyoming.

Torosaurus latus Marsh.

Marsh, O. C. 1891 E, p. 266.
1892 A, p. 81, pl. ii.
1896 C, p. 214, pl. lxii, fig. 1.
Cretaceous (Laramie); Wyoming.

MONOCLONIUS Cope. Type *M. crassus* Cope.

Cope, E. D. 1876 H, p. 255.
Amer. Geologist, 1891 D.
Baur, G. 1890 E, p. 570.
1891 A.
1891 D, p. 450.
Cope, E. D. 1883 J, p. 99.
1889 Q, p. 716.
1889 T, p. 906.
Hatcher, J. B. 1896 A.
Marsh, O. C. 1895 C, p. 497.
Marsh, O. C. 1896 C, p. 217.
Zittel, K. A. 1890 A., p. 752. (Syn? of Triceratops.)

Monoclonius crassus Cope.

Cope, E. D. 1876 H, p. 255.
Baur, G. 1891 A.
Cope, E. D. 1877 G, p. 573.
1880 Q.
1886 E, fig. 2.
1889 Q, p. 715, pl. xxxiii, fig. 1.

Seeley, H. G. 1887 B.
Zittel, K. A. 1890 A, p. 752.
Cretaceous (Laramie); Montana.

Monoclonius fissus Cope.

Cope, E. D. 1889 Q, p. 717.
Cretaceous (Laramie); Montana.

Monoclonius recurvicornis Cope.

Cope, E. D. 1889 Q, p. 716, pl. xxxiv, fig. 1.
1877 G, p. 588, pl. xxxiv, figs. 7, 8. ("Dinosaurian.")
Zittel, K. A. 1890 A, p. 752.
Cretaceous (Laramie); Montana.

Monoclonius sphenocerus Cope.

Cope, E. D. 1889 Q, p. 716, pl. xxxiii, fig. 3.
Osborn, H. F. 1898 N, pp. 842, 844, fig. 1. (Agathaumus.)
1898 Q, p. 5, pl. i, fig. 1. (Agathaumus.)
Cretaceous (Laramie); Montana.

CERATOPS Marsh. Type *C. montanus* Marsh.

Marsh, O. C. 1888 C, p. 477.
Amer. Geologist 1891 D.
Baur, G, 1890 E, p. 570. (Monoclonius.)
1891 A.
1891 D, p. 450. (Monoclonius.)
Cope, E. D. 1889 T, p. 906. (Monoclonius.)
Hatcher, J. B. 1896 A.
Marsh. O. C. 1890 F, p. 4.
1891 C, p. 340.
1895 C, p. 497.
1896 C, p. 216.
Nicholson and Lydekker 1889 A, p. 1163.
Zittel, K. A. 1890 A, p. 751. (Syn.? of Polyonax.)
Marsh, O. C. 1889 E, p. 174.
1897 C, pp. 512, 527, figs. 79, 80.
Walcott, C. D. 1900 A, p. 23.
Cretaceous (Laramie); Colorado.

Ceratops alticornis Marsh.

Marsh, O. C. 1887 B, p. 323, figs. 1, 2. (Bison.)
Barbour, E. H. 1890 B, p. 392, figs. 5, 6.
Cope, E. D. 1889 A. (Polyonax.)

Ceratops montanus Marsh.

Marsh, O. C. 1888 C, p. 477, pl. xi.
1889 B, p. 327.
1890 A, p. 83.
1892 A, p. 84, pl. iii, fig. 4.
1896 C, p. 216, pl. lxiii, fig. 1.
Walcott, C. D. 1900 A, p. 23.
Cretaceous (Laramie); Montana.

Ceratops paucidens Marsh.

Marsh, O. C. 1889 C, p. 336. (Hadrosaurus.)
1890 A, p. 83.
Cretaceous (Laramie); Montana.

CLAORHYNCHUS Cope. Type *C. trihedrus* Cope.

Cope, E. D. 1892 T, p. 757.

Claorhynchus trihedrus Cope.

Cope, E. D. 1892 T, p. 757.
Cretaceous (Laramie); Montana?.

MANOSPONDYLUS Cope. Type *M. gigas* Cope.

Cope, E. D. 1892 T, p. 757.

Manospondylus gigas Cope.

Cope, E. D. 1892 T, p. 757.
Cretaceous (Laramie).

Superfamily IGUANODONTOIDEA nom. nov.

This group is referred to by the following writers under the name *Ornithopoda*, and regarded usually either as an order or a suborder.

Baur, G. 1883 A, p. 436.
1884 A.
1887 C, p. 102.
Cope, E. D. 1882 Q. (Orthopoda.)
1883 J, p. 98.
Dollo, L. 1892 C, p. 11. (Ornithopodes.)
Fürbringer, M. 1888 A.
1900 A.
Gadow, H. 1897 A, p. 205.
1898 A, p. 22.
Haeckel, E. 1895 A, p. 389.
Hulke, J. W. 1883 B. (On Hypsilophodon.)
Lydekker, R. 1888 B, p. 175.
1889 C.
Marsh, O. C. 1881 E, p. 423.
1882 A, p. 84.
1884 G.
1885 D, p. 764.
1887 C, p. 417.
1889 B, p. 328.
1894 E.
1895 C, p. 497.
1896 C, pp. 226, 243.
1896 D, p. 210.
Nicholson and Lydekker 1889 A, p. 1152.
Science 1885 B.
Steinmann and Döderlein 1890 A, p. 665.
Vetter, B. 1885 A, p. 118.
Woodward, A. S. 1898 B, p. 205.
Zittel, K. A. 1890 A, pp. 693, 754.

CAMPTOSAURIDÆ.

Marsh, O. C. 1881 E, p. 423. (Camptonotidæ.)
Dollo, L. 1888 B. (Camptonotidæ.)
Lydekker, R. 1888 B, p. 191. (Iguanodontidæ, in part.)
Marsh, O. C. 1882 A, p. 84. (Camptonotidæ.)
1884 G. (Camptonotidæ).
1885 A.
1885 D.
Marsh, O. C. 1895 C, p. 497. (Camptosauridæ, Laosauridæ.)
1896 C, pp. 196, 243. (Camptosauridæ, Laosauridæ.)
1896 D, p. 210. (Camptosauridæ, Laosauridæ.)
Steinmann and Döderlein 1890 A, p. 665.
Zittel, K. A. 1890 A, p. 755.

CAMPTOSAURUS Marsh. Type *Camptonotus dispar* Marsh.

Marsh, O. C. 1885 A. (To replace Camptonotus, preoccupied.)
Baur, G. 1883 A, p. 437. (Camptonotus.)
Dollo, L. 1888 E. (Camptonotus.)
Lydekker, R. 1888 B, p. 192.
1889 C, p. 46.
1890 A, p. 257.
Marsh, O. C. 1879 H, p. 501. (Camptonotus, type *C. dispar*.)
1881 A, p. 168.
1894 A.
1894 E, p. 85.
1894 G.
1895 C, p. 497.
1896 C, pp. 196, 201.
1897 C, p. 502.
1899 A, p. 251.
Nicholson and Lydekker 1889 A, pp. 1152, 1158.
Steinmann and Döderlein 1890 A, p. 665.
White, C. A. 1883 A.
Williston, S. W. 1890 C, p. 472.
Zittel, K. A. 1890 A, p. 755.

Camptosaurus amplus Marsh.

Marsh, O. C. 1879 H, p. 503. (Camptonotus.)
1885 A.
1896 C, p. 196.
Jurassic; Wyoming.?

Camptosaurus dispar Marsh.

Marsh, O. C. 1879 H, p. 501, pl. iii. (Camptonotus.)
Fürbringer, M. 1900 A, p. 350.
Lydekker, R. 1888 B, p. 192, fig. 36.
Marsh, O. C. 1885 A.
1892 G, p. 176, pl. v.
1894 A, pl. vi.
1894 E, p. 85, pl. v, fig. 1.
1894 G, pl. vi.
1896 C, p. 196, pls. liv, lvi.
1896 D, pl. i, fig. 7.
1897 C, p. 502, pl. xxiii.
1899 A, p. 232, fig. 2.
Williston, S. W. 1890 C. (Cumnoria.)
Zittel, K. A. 1890 A, p. 756, fig. 666, B. C.
Jurassic; Wyoming.

Camptosaurus medius Marsh.

Marsh, O. C. 1894 E, p. 85, pl. iv.
1896 C, p. 196, pl. liii.
1897 C, p. 502, figs. 58, 59.
Jurassic; Colorado?.

Camptosaurus nanus Marsh.

Marsh, O. C. 1894 E, p. 85, pl. v, fig. 3.
1896 C, p. 196, pl. lv, fig. 2.
Walcott, C. D. 1900 A, p. 23.
Jurassic; Wyoming.?

LAOSAURUS Marsh. Type *L. celer* Marsh.

Marsh, O. C. 1878 B, p. 244.
Giebel, C. G. 1879 A, p. 317.
Marsh, O. C. 1878 F, p. 415.
1879 B, pp. 89, 90.
1879 H, p. 501.
1894 E, p. 86.
1895 C, p. 498.
1896 C, pp. 199, 201.
1897 C, p. 503.
Nicholson and Lydekker 1889 A, p. 1159.
Williston, S. W. 1878 A, p. 45.
Zittel, K. A. 1890 A, p. 755.

Laosaurus celer Marsh.

Marsh, O. C. 1878 B, p. 244.
King, C, 1878 A, p. 346.
Marsh, O. C. 1896 C, p. 199.
Jurassic; Wyoming.

Laosaurus consors Marsh.

Marsh, O. C. 1894 E, p. 87, pl v, fig. 4; pl. vi, fig. 1; pl. vii, fig. 1.
1895 C, pl. x, fig. 4.
1896 C, p. 199, pl. lv, figs. 1, 3; pl. lvii; text fig. 61.
1896 D, p. 199, pl. i, fig. 4; text fig. 6.
1897 C, p. 503, pl. xxiv.
Jurassic; Wyoming.

Laosaurus gracilis Marsh

Marsh, O. C. 1878 B, p. 244.
King, C. 1878 A, p. 436.
Marsh, O. C. 1896 C, p. 199.
Jurassic; Colorado.

DRYOSAURUS Marsh. Type *Laosaurus altus* Marsh.

Marsh, O. C. 1894 E, p. 86.
1895 C, p. 498.
1896 C, pp. 198, 201.

Dryosaurus altus Marsh.

Marsh, O. C. 1878 F, p. 415, pls. ix, x. (Laosaurus.)
Marsh, O. C. 1879 A, pl. viii, fig 1. (Laosaurus.)
1892 G, p. 176. (Laosaurus.)
1894 E, p. 86, pl. vii, fig. 2.
1896 C, p. 198, pl. lv, fig. 4.
Zittel, K. A. 1890 A, p. 756, fig. 666 A.
Jurassic; Colorado, Wyoming.

IGUANODONTIDÆ.

Andrews, C. W. 1897 A. (Iguanodon.)
Baur, G. 1883 A, p. 437.
1885 D. (Iguanodon.)
1891 D. (Iguanodon.)
Dollo L. 1882 B.
1882 C.
1883 A.
1883 B.
1883 C.
1883 D.
1884 B.
Fürbringer, M. 1900 A, p. 358.
Hulke, J. W. 1883 A.
1884 A.
1885 A.
Huxley, T. H. 1870 D.
Lydekker, R. 1888 B, p. 191.
1889 L.
Mantell, G. A. 1848 A. (Iguanodon.)
1848 B, p. 40. (Iguanodon.)
1849 A. (Iguanodon.)
Marsh, O. C. 1884 G.
1890 C, p. 425. (Claosauridæ.)
1895 B, p. 411, pl. viii. (Iguanodon.)
Marsh, O. C. 1895 C. p. 498. (Iguanodontidæ, Claosauridæ.)
1896 C, pp. 230, 244. (Iguanodontidæ, Claosauridæ.)
1896 D, p. 211. (Iguanodontidæ, Claosauridæ.)
Nicholson and Lydekker 1889 A, p. 1140.
Owen, R. 1842 A, p. 124. (Iguanodon.)
1845 B, p. 246. (Iguanodon.)
1851 B, p. 105. (Iguanodon.)
1857 B, p. 1. (Iguanodon.)
1860 B, p. 27. (Iguanodon.)
1864 B, p. 19. (Iguanodon.)
1872 A. (Iguanodon.)
1874 A. (Iguanodon.)
Pictet, F. J. 1853 A, p. 470. (Iguanodon.)
Quenstedt, F. A. 1885 A, p. 184. (Iguanodon.)
Sauvage, H. E. 1874 B, p. 12. (Iguanodon.)
Seeley, H. G. 1887 B.
1891 A, p. 258, fig. 15. (Iguanodon.)
Woodward, A. S. 1898 B, p. 205. (Iguanodon.)
Woodward, H. 1885 B. (Iguanodon.)
1895 A.
Zittel, K. A. 1890 A, p. 757.

THESPESIUS Leidy. Type *T. occidentalis* Leidy.

Leidy, J. 1856 Q, p. 311.
Cope, E. D. 1869 M, pp. 91, 98. (Syn. of Hadrosaurus.)
1871 G, p. 52.
Fürbringer, M. 1900 A, p. 350. (Claosaurus.)
Hatcher, J. B. 1900 A, p. 719.
Leidy, J. 1857 C.
1860 A, p. 151.
1865 A, p. 84.
1870 J, p. 67.
1874 A, p. 74.
Lucas, F. A. 1900 C, p. 809. (Thespesius.)
Marsh, O. C. 1890 C, p. 423. (Claosaurus, type *Hadrosaurus agilis* Marsh.)
1892 G, p. 171. (Claosaurus.)
1892 H. (Claosaurus.)
1893 B, p. 83. (Claosaurus.)
1893 F, p. 153. (Claosaurus.)
1895 C, p. 498. (Claosaurus.)
1896 C, p. 219. (Claosaurus.)
1896 D. (Claosaurus.)
1897 C, p. 516. (Claosaurus.)
Woodward, A. S. 1898 B, p. 208. (Claosaurus.)
Zittel, K. A. 1890 A, p. 763. (Claosaurus, Thespesius?.)

The genus *Claosaurus* is identified with *Thespesius* on the authority of Mr. F. A. Lucas, of the U. S. National Museum.

Thespesius agilis (Marsh.)

Marsh, O. C. 1872 D. (Hadrosaurus.)
Cope, E. D. 1874 C, p. 20. (Hadrosaurus.)
1875 E, p. 247. (Hadrosaurus.)
Marsh, O. C. 1877 C. (Hadrosaurus.)
1890 C, p. 423, fig. 3. (Claosaurus.)
1896 C, p. 219, fig. 55. (Claosaurus.)
Nopcsa, F. B. 1899 A. p. 557. (Claosaurus.)
Williston, S. W. 1898 C, p. 69.
Zittel, K. A. 1890 A, p. 763, fig. 673. (Claosaurus.)
Cretaceous (Niobrara); Kansas.

Thespesius occidentalis Leidy.

Leidy, J. 1856 Q, p. 311.
Cope, E. D. 1869 M, p. 98. (Hadrosaurus?.)
1871 G, p. 51. (Hadrosaurus.)
1874 B, p. 446. (Hadrosaurus.)
1874 C, p. 20. (Hadrosaurus.)
1874 P, p. 10. (H. milo; no description.)
1874 R. (Hadrosaurus.)
1875 E, pp. 56, 248, pl. iii, figs. 5, 6 (Hadrosaurus); p. 58 (Agathaumus milo a synonym).
Dana, J. D. 1896 A, p. 844, figs. 1408-1411. (Claosaurus annectens.)
Fürbringer, M. 1900 A, p. 351, figs. 123, 125, 128. (Claosaurus annectens.)
Hatcher, J. B. 1893 A, p. 143. (Claosaurus annectens.)
Leidy, J. 1857 C, p. 91.
1860 A, p. 151, pl. x, figs. 1-5. (Not figs. 6, 7, *fide* Leidy.)
1865 A, p. 84.
1870 J, pp. 67, 68.
Lucas, F. A. 1900 C, p. 809.
Marsh, O. C. 1892 E, p. 453, fig. 4. (Claosaurus annectens.)
1892 G, p. 171, pls. ii, iii. (C. annectens.
1892 H, p. 344, pl. vi. (C. annectens.)
1893 B, p. 83, pls. iv, v. (C. annectens.)
1893 F, p. 155, pl. vii. (C. annectens.)
1894 E, pl. vii, fig. 5. (C. annectens.)
1895 C, pl. x, fig. 12. (C. annectens.)
1896 C, p. 219, pls. lxxii-lxxiv; pl. lxxv, fig. 4; pl. lxxvi, fig. 2; pl. lxxvii, fig. 3; pl. lxxviii, fig. 2; pl. lxxix, fig. 5; pl. lxxx, fig. 3. (C. annectens.)

Marsh, O. C. 1896 D, pl. i, fig. 12. (C. annectens.)
1897 C, p. 517, pl. xxviii; text figs. 81, 82. (C. annectens.)
Nopcsa, F. B. 1899 A. P. 556 (Hadrosaurus occidentalis): p. 557 (Claosaurus annectens).
Woodward, A. S. 1898 B, p. 209, fig. 128. (C. annectens.)
Cretaceous (Laramie); Wyoming, Colorado, South Dakota.

PTEROPELYX Cope. Type *P. grallipes* Cope.

Cope, E. D. 1889 T, p. 904.
1892 T, p. 758. (Claosaurus a synonym.)
Marsh, O. C. 1892 H, p. 346.
1896 C, p. 224.

Pteropelyx grallipes Cope.

Cope, E. D. 1889 T, p. 904.
Cretaceous; (Laramie) Montana.

TRACHODONTIDÆ.

Lydekker, R. 1888 B, p. 241. (Replacing Hadrosauridæ.)
Cope, E. D. 1869 M, p. 91. (Hadrosauridæ.)
1883 J. (Hadrosauridæ.)
1891 N, p. 43. (Hadrosauridæ.)
1898 R, p. 70. (Hadrosauridæ.)
Marsh, O. C. 1882 A, p. 84. (Hadrosauridæ.)
1884 G. (Hadrosauridæ.)
1885 D, p. 764. (Hadrosauridæ.)
Marsh, O. C. 1890 C, p. 424.
1895 C, p. 498.
1896 C, p. 244.
1896 D, p. 211.
Nicholson and Lydekker 1889 A, p. 1158.
Nopcsa, F. B. 1899 A. p. 556. ("Hadrosauriden".)
Steinmann and Döderlein 1890 A, p. 667.
Zittel, K. A. 1890 A, p. 763. (Hadrosauridæ.)

TRACHODON Leidy. Type *T. mirabilis* Leidy.

Leidy, J. 1856 F, p. 72.
Baur, G. 1883 A, p. 489. (Hadrosaurus.)
Cope, E. D. 1869 M, p. 91. (Hadrosaurus.)
1871 G, p. 52. (Thespesius.)
1874 B, p. 447. (Hadrosaurus.)
1874 C, p. 22. (Hadrosaurus.)
1875 E, p. 247. (Hadrosaurus.)
1876 H, p. 253. (Diclonius, type *D. pentagonus.*)
1877 V. (Diclonius.)
1883 J, p. 99. (Hadrosaurus.)
1883 CC. (Diclonius.)
1884 F. (Diclonius.)
1887 S, p. 338, pls. xv, xvi.
1889 E. (Hadrosaurus.)
1889 T, p. 904. (Diclonius.)
1898 B, p. 71. (Diclonius.)
Dollo, L, 1883 C, p. 211. (Hadrosaurus.)
1884 B, p. 137, pl. vi, fig. 2. (Diclonius.)
Foulke, W. P. 1858 A. (Hadrosaurus.)
Gadow, H. 1897 A, p. 205. (Hadrosaurus, Diclonius.)
Hawkins, B. W. 1874 A. (Hadrosaurus.)
1875 A. (Hadrosaurus.)
Leidy, J. 1856 C, p. 118. (Trachodon.)
1858 A, p. 215. (Hadrosaurus, type *H. foulkii*, Leidy.)
1859 A. (Hadrosaurus.)
1865 A, p. 84. (Trachodon, Hadrosaurus.)
1865 D, p. 71. (Hadrosaurus, Trachodon.)
1868 F, p. 199. (Trachodon, Hadrosaurus.)
1870 J, p. 67. (Hadrosaurus.)
Lippincott, J. S. 1881 A. (Hadrosaurus.)
Lydekker, R. 1886 C, p. 275, fig. 3. (Hadrosaurus.)
1888 B, p. 243. (Trachodon.)
Marsh, O. C. 1893 B, p. 85. (Hadrosaurus.)
1895 C, p. 498.
1896 C, p. 224.
Nicholson and Lydekker 1889 A, p. 1153. (Trachodon.)
Nopcsa, F. B. 1899 A, p, 555. (Hadrosaurus.)
Osborn, H. F. 1893 B, p. 326. (Diclonius.)
Owen, R. 1875 C, p. 74. (Hadrosaurus.)
Steinmann and Döderlein 1890 A, p. 667 (Hadrosaurus); p. 668 (Diclonius).
Woodward, A. S. 1890 A, p. 393. (Hadrosaurus.)
Zittel, K. A. 1890 A, p. 763. (Hadrosaurus.)

Trachodon breviceps Marsh.

Marsh, O. C. 1889 C, p. 335, figs. 4, 5. (Hadrosaurus.)
Cope, E. D. 1889 T, p. 906. (Hadrosaurus.)
Hatcher, J. B. 1896 A, p. 116. (Hadrosaurus.)
Marsh, O. C. 1890 C, p. 423, figs. 1, 2. (Hadrosaurus.)
1896 C, pl. lxxv, figs. 1, 2. (Trachodon.)
Nopcsa, F. B. 1899 A, p. 557. (Hadrosaurus.)
Zittel, K. A. 1890 A, p. 765, fig. 676. (Hadrosaurus.)
Cretaceous (Laramie); Montana.

Trachodon calamarius (Cope).

Cope, E. D. 1876 H, p. 255. (Diclonius.)
1877 G, pp. 572, 588. (Diclonius.)
Cretaceous (Laramie); Montana.

Trachodon cavatus (Cope).

Cope, E. D. 1871 G, p. 50. (Hadrosaurus.)
1875 E, p. 248. (Hadrosaurus.)
Nopcsa, F. B. 1899 A, p. 557. (Hadrosaurus.)
Cretaceous; New Jersey.

Trachodon foulkii Leidy.

Leidy, J. 1858 A. (Hadrosaurus.)
Cope, E. D. 1867 E, p. 27. (Hadrosaurus.)
1869 B, p. 736. (Hadrosaurus.)
1869 M, p. 98. (Hadrosaurus.)
1875 E, p. 247. (Hadrosaurus.)
Emmons, E. 1860 A, p. 208, fig. 180^a. (Hadrosaurus.)

Leidy, J. 1859 A. (Hadrosaurus.)
1865 A, pp. 76, 118, pl. ii, figs. 9-11; pl. viii, fig. 13; pl. xii, figs. 1-20; pl. xiii, figs. 1-19, 24-26; pl. xiv, figs. 1-12; pl. xv, figs. 1-6; pl. xvi, figs. 1-8; pl. xvii, figs. 1-5; pl. xx, figs. 1, 2. (Hadrosaurus.)
1865 D, p. 70. (Hadrosaurus.)
1868 F, p. 199. (Trachodon.)
1870 J, p. 68. (Hadrosaurus.)
Lydekker, R. 1888 B, p. 224, fig. 50.
Nicholson and Lydekker 1889 A, p. 1153, fig. 1058.
Nopcsa, F. B. 1899 A, p. 556. (Hadrosaurus.)
Zittel, K. A. 1890 A, p. 764, fig. 674.
Cretaceous; New Jersey.

Trachodon longiceps Marsh.

Marsh, O. C. 1890 C, p. 422.
Nopcsa, F. B. 1899 A, p. 557. (Hadrosaurus.)
Cretaceous (Laramie); Wyoming.

Trachodon minor (Marsh).

Marsh, O. C. 1870 F. (Hadrosaurus.)
Cope, E. D. 1869 M (1870), p. 122 J. (Hadrosaurus.)
1875 E, p. 247. (Hadrosaurus.)
Leidy, J. 1870 J, p. 68.
Nopcsa, F. B. 1899 A, p. 557. (Hadrosaurus.)
Cretaceous; New Jersey.

Trachodon mirabilis Leidy.

Leidy, J. 1856 F, p. 72.
Cope, E. D. 1869 M, p. 98. (Hadrosaurus.)
1874 C. pp. 8, 19. (Hadrosaurus.)
1875 E, pp. 56, 247. (Hadrosaurus.)
1877 G, p. 573. (Trachodon.)
1883 C. (Diclonius.)
1883 J. pls. iv-vii. (Diclonius.)
1883 CC. (Diclonius.)
1884 F. (Diclonius.)
1885 R, pl. xxxvii, figs. 1-3. (Diclonius.)
Cope, E. D. 1886 E, fig. 1. (Diclonius.)
1891 N, p. 44, fig. 22. (Diclonius.)
1898 B, p. 71, fig. 23. (Diclonius.)
Lambe, L. M. 1899 A, p. 69.
Leidy, J. 1856 C, p. 118.
1860 A, p. 140, pl. ix, figs. 1-20.
1870 J, p. 68. (Hadrosaurus.)
Marsh, O. C. 1892 H, p. 344. (Hadrosaurus.)
Nopcsa, F. B. 1899 A, p. 556. (Hadrosaurus.)
Osborn, H. F. 1898 N, pp. 842, 844, fig. 2. (Hadrosaurus.)
1898 Q, p. 6, pl. i, fig. 2. (Hadrosaurus.)
Zittel, K. A. 1890 A, p. 764, fig. 675. [Hadrosaurus (Diclonius).]
Cretaceous (Laramie); Montana, British America.

Trachodon pentagonus (Cope).

Cope, E. D. 1876 H, p. 253. (Diclonius.)
1877 G, pp. 572, 594. (Diclonius.)
1888 T, p. 905. (Diclonius.)
Cretaceous (Laramie); Montana.

Trachodon perangulatus (Cope).

Cope, E. D. 1876 H, p. 254. (Diclonius.)
1877 G, pp. 572, 588. (Diclonius.)
Cretaceous (Laramie); Montana.

Trachodon tripos (Cope).

Cope, E. D. 1869 I. (Hadrosaurus.)
1869 M, p. 122 I. (Hadrosaurus.)
1870 J, p. 68. (Hadrosaurus.)
1871 M, p. 214. (Hadrosaurus.)
1875 E, p. 247. (Hadrosaurus.)
1875 V, p. 40, pl. v, figs. 1, 2. (Hadrosaurus.)
1878 EE. (Hadrosaurus.)
Leidy, J. 1870 J, p. 68. (Hadrosaurus.)
Nopcsa, F. B. 1899 A, p. 557. (Hadrosaurus.)
Cretaceous; North Carolina, Georgia.

CIONODON Cope. Type *C. arctatus* Cope.

Cope, E. D. 1874 P, p. 10. (Cinodon, *errore typog.*)
1874 B, p. 447.
1874 C, p. 21.
1875 E, pp. 57, 246.
1875 W, p. 334.
1876 H, p. 253.
1877 V.
1883 J, p. 99.
Lydekker, R. 1886 C, p. 276.
Marsh, O. C. 1895 C, p. 498.
Steinmann and Döderlein 1890 A, p. 667.
Zittel, K. A. 1890 A, p. 765.

Cionodon arctatus Cope.

Cope, E. D. 1874 P, p. 10.
Cope, E. D. 1874 B, pp. 448, 449.
1874 C, p. 22.
1874 F.
1875 E, pp. 60, 246, pls. i, ii.
1877 G, p. 597.
Nopcsa, F. B. 1899 A, p. 557.
Cretaceous (Laramie); Colorado.

Cionodon stenopsis Cope.

Cope, E. D. 1875 I.
1875 E, pp. 63, 247.
1875 W, p. 335.
Nopcsa, F. B. 1899 A, p. 557.
Cretaceous (Laramie); Saskatchewan.

DYSGANUS Cope. Type *D. encaustus* Cope.

Cope, E. D. 1876 H, p. 250.
1883 J, p. 99.
1890 D.
Zittel, K. A. 1890 A, p. 765.
A genus of uncertain affinities.

Dysganus bicarinatus Cope.

Cope, E. D. 1876 H, p. 252.
1877 G, p. 572.
Cretaceous (Laramie); Montana.

Dysganus encaustus Cope.

Cope, E. D. 1876 H, p. 250.
1877 G, p. 572.
Cretaceous (Laramie); Montana.

Dysganus haydenianus Cope.

Cope, E. D. 1876 H, p. 251.
Cope, E. D. 1877 G, pp. 572, 596.
Cretaceous (Laramie): Montana.

Dysganus peiganus Cope.

Cope, E. D. 1876 H, p. 252.
1877 G, p. 572.
Cretaceous (Laramie); Montana.

ORNITHOTARSUS Cope. Type *O. immanis* Cope.

Cope, E. D. 1869 H, p. 123.
1869 M, p. 120.
1883 J, p. 99.
Morse, E. S. 1880 A, p. 7.
Zittel, K. A. 1890 A, p. 765.

Ornithotarsus immanis Cope.

Cope, E. D. 1869 H, p. 123.
Cope, E. D. 1869 D.
1869 M, p. 121, figs. 35–36*a*.
1875 E, p. 248.
1885 R.
Nopcsa, F. B. 1899 A, p. 577.
Cretaceous; New Jersey.

PNEUMATOARTHRUS Cope. Type *P. peloreus* Cope.

Cope, E. D. 1870 I, p. 446.
1875 E, p. 260. (Pneumatarthrus.)
1878 I, p. 236. (Pneumatarthrus.)
Zittel, K. A. 1890 A, p. 765. (Syn.? of Ornithotarsus.)

Pneumatoarthrus peloreus Cope.

Cope, E. D. 1870 I, p. 446.
Cope, E. D. 1872 L, p. 433. (Pneumatarthrus.)
1875 E, p. 260. (Pneumatarthrus.)
Leidy, J. 1865 A, p. 100, pl. xiii, figs. 27, 28. (Young? of Hadrosaurus.)
Cretaceous; New Jersey.

NANOSAURIDÆ.

Marsh, O. C. 1878 B, p. 244.
1895 C, p. 498.
1896 C, p. 244.
Marsh, O. C. 1896 D, p. 211.
Zittel, K. A. 1890 A, p. 766.

NANOSAURUS Marsh. Type *N. agilis* Marsh.

Marsh, O. C. 1877 D, p. 254.
1891 F, p. 337.
1894 E, p. 87.
1895 C, p. 498.
1896 C, pp. 199, 201, 202.
1897 C, p. 483.
Nicholson and Lydekker 1889 A, p. 1059.
Steinmann and Döderlein 1890 A, p. 624.
Williston, S. W. 1878 A, p. 45.
Zittel, K. A. 1890 A, p. 766.

Nanosaurus agilis Marsh.

Marsh, O. C. 1877 D, p. 254.
King, C. 1878 A, p. 346.
Marsh, O. C. 1894 E, pl. vi, fig. 3.
1896 C, p. 199, text figs. 42, 43.
1897 C, p. 484, figs. 27, 28.
Jurassic; Colorado.

Nanosaurus rex Marsh.

Marsh, O. C. 1877 G, p. 516.
King, C. 1878 A, p. 346.
Marsh, O. C. 1894 E, p. 88, pl. vi, fig. 5.
1896 C, p. 200, text figs. 44–48.
1897 C, p. 484, fig. 29.
Jurassic; Colorado.

MACELOGNATHIDÆ.

Marsh, O. C. 1884 C, p. 341.
Woodward, A. S. 1887 C, p. 8.

MACELOGNATHUS Marsh. Type *M. vagans* Marsh.

Marsh, O. C. 1884 C, p. 341.
Amer. Geologist, 1891 D.
Baur, G. 1891 D, p. 450. (Cœlurus.)
Marsh, O. C. 1897 C, p. 508.
Nicholson and Lydekker 1889 A, p. 1089.
Zittel, K. A. 1890 A, p. 513.

For this genus Professor Marsh has established the family *Macelognathidæ* and the order *Macelognatha*, and assigned them a place among the *Testudinata*. The relationships of the fossil are problematical.

Macelognathus vagans Marsh.

Marsh, O. C. 1884 C, p. 341, figure.
1897 C, p. 507, figs. 65, 66.
Jurassic; Wyoming.

APATODON Marsh. Type *A. mirus* Marsh.

Marsh, O. C. 1877 D, p. 255.
Baur, G. 1890 C, p. 301.
A doubtful genus of doubtful position.

Apatodon mirus Marsh.

Marsh, O. C. 1877 D, p. 255.
Jurassic; Rocky Mountain region.

BRACHYROPHUS Cope. Type *B. altarkansanus* Cope.

Cope, E. D. 1878 H, p. 390.
Even the ordinal portion of this genus is doubtful.

Brachyrophus altarkansanus Cope.

Cope, E. D. 1878 H, p. 390.
Jurassic; Colorado.

Order PTEROSAURI Kaup.

Kaup, J. 1834, Isis, p. 315.
Baur, G. 1887 A, p. 487. (Ornithosauria.)
1887 C, p. 101. (Ornithosauria.)
1889 G. (Pterosauria.)
1891 C, p. 355. (Pterosauria.)
Blainville, H. M. D., 1835, Nouv. Ann. Mus., iv, p 238. (Pterodactylia.)
Bonaparte, C. L., 1838, Nuovi Ann. Sci. Nat. Bologna, i, p. 391. (Ornithosauri.)
Cope, E. D. 1869 M, pp. 26, 28, 169, and ii. (Pterosauria.)
1871 B, p. 234. (Ornithosauria.)
1885 G, p. 246. (Ornithosauria.)
1887 S, p. 333. (Ornithosauria.)
1889 R, p. 863. (Ornithosauria.)
1891 N, p. 41. (Ornithosauria.)
1892 R. (Pterosauria.)
1898 B, pp. 56, 67. (Ornithosauria.)
1900 A, p. 160. (Ornithosauria.)
Fürbringer, M. 1900 A, pp. 355, 527, 660. (Patagiosauria.)
Gadow, H. 1898 A, p. 23. (Pterosauria.)
Gaudry, A. 1890 C, p. 235.
Günther, A. 1886 A, p. 443. (Ornithosauria.)
Haeckel, E. 1895 A, p. 390. (Pterosauria.)
Hawkins, B. W. 1874 A. (Ornithosauria.)
Hay, O. P. 1899 F, p. 682.
Huxley, T. H. 1872 A, p. 228. (Pterosauria.)
Kehner, F. A. 1876 A. (Pterosauria.)
Lortet, L. 1892 A, p. 128. (Pterosauria.)
Lydekker, R. 1888 B, p. 2 (Ornithosauria); p. 3 (Pteranodontia, Pterosauria).
Marsh, O. C. 1876 E. (>Pteranodontia.)
1876 G. (>Pteranodontia.)
1876 I. (>Pteranodontia.)
1877 E. (Pterosauria, Pteranodontia.)
1881 D. (>Pteranodontia.)
1882 B. (Pterosauria, Pteranodontia.)
1884 D. (Pterosauria, Pteranodontia.)
Meyer, H. 1851 A. (Pterosauria.)
1860 A. (Pterosauria.)
1860 D. (Pterosauria.)
Newton, E. T. 1888 A. (Ornithosauria.)
1889 B. (Ornithosauria.)
Nicholson and Lydekker 1889 A, p. 1196 (Ornithosauria); p. 1198 (Pteranodontia); p. 1199 (Pterosauria).
Owen, R. 1840. (Pterosauria.)
1851 A. (Pterosauria.)
1859 A. (Pterosauria.)
1859 B. (Pterosauria.)
1860 A, p. 162. (Pterosauria.)
1860 B. (Pterosauria.)
1860 C. (Pterosauria.)
1860 E, p. 244. (Pterosauria.)
1866 A. (Pterosauria.)
1870 A. (Pterosauria.)
1874 B. (Pterosauria.)
Pictet, F. J. 1853 A, p. 522. ("Ptérodactyliens.")
Plieninger, F. 1895 A. (Pterosauria.)
Quenstedt, F. A. 1852 A, p. 135. (Pterodactyli.)
1885 A, p. 219. Pterosauri.)
Seeley, H. G. 1865 A. (Saurornia.)
1866 A. (Saurornia.)
1870 A, p. 151. (Ornithosauria.)
1870 B. (Ornithosauria.)
1871 C. (Ornithosauria.)
1876 A. (Ornithosauria.)
1891 A. (Ornithosauria.)
1891 B. (Ornithosauria.)
Steinmann and Döderlein, 1890 A, p. 647. (Pterosauria.)
Williston, S. W. 1892 A. (Pterosauria.)
1897 A (Pterosauria.)
Woodward, A. S. 1898 B, p. 224. (Ornithosauria.)
Woodward, H. 1871 A. (Ornithosauria.)
Zittel, K. A. 1882 A. (Pterosauria.)
1890 A, pp. 450, 773, 779. (Pterosauria.)

ORNITHOCEPHALIDÆ nom. nov.

This family, unless otherwise indicated, is denominated by the following authors *Pterodactylidæ*.

Bowerbank, J. S. 1851 A.
Cope, E. D. 1893 F.
Fürbringer, M. 1900 A.
Haeckel, E. 1895 A, p. 397. (Pterodactylida.)
Huxley, T. H. 1876 B, xiii, p. 515.
Lydekker, R. 1888 B, p. 3.
Nicholson and Lydekker 1889 A, p. 1199.
Owen, R. 1851 A.
Owen, R. 1859 A.
1859 D.
1860 B.
Quenstedt, F. A. 1885 A, p. 219.
Seeley, H. G. 1866 A.
1870 B. p. 111. (Pterodactylæ.)
1876 A.
Steinmann and Döderlein 1890 A, p. 650.
Williston, S. W. 1892 A, p. 12. (Pterodactylinæ.)
1897 A.
Zittel, K. A. 1890 A, p. 791.

ORNITHOCEPHALUS Sömm. Type *O. antiquus* Sömm.

Sömmerring, S. T., 1812, Denkschr. k. Akad. München, iii, p. 126.

Unless otherwise indicated the following authors refer to this genus under the name *Pterodactylus*. The latter name is usually credited to Cuvier, 1809, Ann. Mus., xiii, p. 424. There, however, we find only the French term *Petro-dactyle*. Even in case this is a misprint for Pterodactyle, it is inadmissable as a generic name. *Pterodactylus* appears to have been used first in 1824 by Cuvier.

Bowerbank, J. S. 1848 A.
1851 A.
Cope, E. D. 1872 F, p. 337. (Ornithochirus, not of Seeley.)
1879 A, p. 35.
1893 F.
Cuvier, G. 1834 A, x, pp. 215-263, pl. ccli.
Dennis, J. B. P. 1861 A.
Hallmann, E. 1837 A, p. 20.
Huxley, T. H. 1872 A, p. 228.
Lortet, L. 1888 B, p. 4.
Lydekker, R. 1888 B, p. 4.
Meyer, H. 1860 D, p. 85.
1861 B.
Newton, E. T. 1888 A.
Nicholson and Lydekker 1889 A, p. 1200.
Owen, R. 1845 B, p. 273, pl. lxiii A.
1851 A.
1851 B, p. 80.
1859 B.
1859 D, p. 1.
1860 A, p. 163.
1860 B, p. 1.
1860 C.
1870 A.
1874 B.
Pictet, F. J. 1853 A, p. 524.
Quenstedt, F. A. 1858 A.
Seeley, H. G. 1865 A.
1870 A.
1870 B, p. 111.
1871 C.
1876 A.
1891 A.
Steinmann and Döderlein 1890 A, p. 650.
Wagner, A. 1851 B, p. 180. (Ornithocephalus.)
Winckler, T. C. 1874 A.
Zittel, K. A. 1890 A, p. 771.

At present no American species is assigned to this genus.

DERMODACTYLUS Marsh. Type *Pterodactylus montanus* Marsh.

Marsh, O. C. 1881 D, p. 342.
Nicholson and Lydekker 1889 A, p. 1201.
Zittel, K. A. 1890 A, p. 798.

The relationships of this genus are somewhat obscure.

Dermodactylus montanus Marsh.

Marsh, O. C. 1878 E, p. 233. (Pterodactylus.)
1881 D.
1897 C, p. 508.
Jurassic; Wyoming.

PTERANODONTIDÆ.

Marsh, O. C. 1876 E, p. 507.
Cope, E. D. 1898 B, p. 67.
Fürbringer, M. 1888 A.
1900 A.
Marsh, O. C. 1884 D.
1897 C, p. 509. (Pteranodontia.)
Nicholson and Lydekker 1890 A, p. 1199.
Steinmann and Döderlein 1890, A, p. 650.
Williston, S. W. 1892 A. (Pteranodontinæ.)
1893 B. (Ornithostomatidæ.)
1897 A, p. 36. (Ornithostomatinæ.)
Zittel, K. A. 1890 A, p. 798.

PTERANODON Marsh. Type *P. longiceps* Marsh.

Marsh, O. C. 1876 E, p. 507.

Since the question of the identity of *Pteranodon* Marsh and *Ornithostoma* Seeley has been raised, references to the literature of the latter genus are here included.

Cope, E. D. 1893 F.
Grinnell, G. B. 1881 A, p. 257.
Marsh, O. C. 1876 G, p. 59.
1876 I.
1881 D.
1882 B, p. 253.
1884 D.
1897 C, p. 509.
Newton, E. T. 1888 A, p. 418 (Ornithostoma); p. 419 (Pteranodon).
Nicholson and Lydekker 1889 A, p. 1199.
Seeley, H. G. 1871 C, p. 35. (Ornithostoma.)
Seeley, H. G. 1876 B, p. 499. (Ornithostoma.)
1891 B, p. 442. (Ornithostoma.)
Steinmann and Döderlein 1890 A, p. 651.
Williston, S. W. 1891 B.
1892 A, pp. 1, 3, pl. i.
1893 B. (Ornithostoma.)
1895 B. (Ornithostoma.)
1896 B, pl. i. (Ornithostom
1897 A. (Ornithostoma.)
Woodward, A. S. 1898 B, p. 229.
Zittel, K. A. 1890 A, p. 799.

Pteranodon comptus Marsh.

Marsh, O. C. 1876 E, p. 509.
Williston, S. W. 1892 A, p. 2.
Cretaceous (Niobrara); Kansas.

Pteranodon ingens Marsh.

Marsh, O. C. 1872 B, p. 246. (Pterodactylus.)
Amer. Naturalist, 1872 A. (Pterodactylus.)
Cope, E. D. 1872 F, p. 337. (Ornithochirus umbrosus.)
1872 K, p. 42. (Ornithochirus umbrosus.)
1874 C, p. 26. (Pterodactylus umbrosus, P. ingens.)
1875 E, p. 249 (Pterodactylus ingens); pp. 48, 65, 247, pl. vii, figs. 1-4 (P. umbrosus).
Marsh, O. C. 1872 S, p. 578. (Pterodactylus.)
1872 T, p. 496. (Pterodactylus.)
1876 E, p. 506.
1876 I, p. 480.
1884 D, p. 426.
Williston, S. W. 1891 B, p. 1124. (P. umbrosus.)
1892 A, p. 2. (P. ingens; P. umbrosus.)
1893 B, figure. (Ornithostoma.)
1897 A, pl. ii, text figs. 1, 2. (Ornithostoma.)
1897 H, p. 245. (Ornithostoma.)
Cretaceous (Niobrara); Kansas.

Pteranodon longiceps Marsh.

Marsh, O. C. 1876 E, p. 598.
Lydekker, R. 1888 B, p. 3, fig 1.
Marsh, O. C. 1876 I, p. 480.
1884 D, pl. xv.
1897 C, p. 510, figs. 71-74.
Williston, S. W. 1891 B, p. 1124.
1892 A, p. 2.
Woodward, A. S. 1898 B, p. 229, fig. 140.
Zittel, K. A. 1890 A, p. 799, fig. 694.
Cretaceous; Kansas.

Pteranodon nanus Marsh.

Marsh, O. C. 1881 D, p. 343.
Williston, S. W. 1892 A, p. 2.
Cretaceous; Kansas.

Pteranodon occidentalis Marsh.

Marsh, O. C. 1872 B, p. 241. (Pterodactylus.)
Cope, E. D. 1871 C. (Pterodactylus owenii Marsh, not of Seeley.)
1872 F, p. 337. (Ornithochirus harpygia.)
1872 K, p. 471. (Ornithochirus harpygia.)
1874 C, p. 26. (Pterodactylus.)
1875 E, pp. 48, 66, 249, pl. vii, figs. 5, 6. (Pterodactylus.)
Marsh, O. C. 1871 C, p. 472. (Pterodactylus oweni.)
1872 S, p. 578. (Pterodactylus.)
1872 T, p. 495. (Pterodactylus.)
1876 E, p. 508.
1884 D, p. 423.
1897 C, p. 527.
Williston, S. W. 1892 A, p. 1.
Cretaceous (Niobrara); Kansas.

Pteranodon velox Marsh.

Marsh, O. C. 1872 B, p. 247. (Pterodactylus.)
Cope, E. D. 1874 C, p. 26. (Pterodactylus.)
1875 E, p. 250. (Pterodactylus.)
Marsh, O. C. 1872 T, p. 496. (Pterodactylus.)
1876 I, p. 480.
Williston, S. W. 1892 A, p. 2.
Cretaceous (Niobrara); Kansas.

NYCTOSAURIDÆ.

Nicholson and Lydekker 1889 A, p. 1199. (Family suggested.)
Williston, S. W. 1897 A, p. 36. (Nyctodactylinæ.)

NYCTOSAURUS Marsh. Type *Pteranodon gracilis* Marsh.

Marsh, O. C. 1876 I, p. 480.
Cope, E. D. 1893 F. (Nyctodactylus.)
Marsh, O. C. 1881 D, p. 343. (Nyctodactylus, to replace Nyctosaurus.)
Newton, E. T. 1888 A, p. 420. (Nyctodactylus.)
Nicholson and Lydekker 1889 A, p. 1199. (Nyctodactylus.)
Williston, S. W. 1892 A, p. 2. (Nyctodactylus.)
1897 A, p. 39. (Nyctodactylus.)
Williston, S. W. 1897 H, p. 245. (Nyctodactylus.)
Zittel, K. A. 1890 A, p. 799. (Nyctodactylus.)

Nyctosaurus gracilis Marsh.

Marsh, O. C. 1876 E, p. 508. (Pteranodon.)
1876 I, p. 480.
1881 D, p. 343. (Nyctodactylus.)
Williston, S. W. 1892 A, pp. 3, 5. (Nyctodactylus.)
Cretaceous; Kansas.

Order LORICATA Merrem.

Merrem, B., 1820, Tentamen Syst. Amphib., p. 7.

Unless otherwise indicated the following authorities apply the name *Crocodilia* to this group.

Baur, G. 1885 E, p. 633.
1886 G, pp. 689, 738.
1886 J.
1887 A, p. 487.
1887 C, p. 101.
1889 C, p. 240.
1891 C, p. 355.
1894 A, p. 323.
1895 D.
Boulenger, G. A. 1889 A, p. 273. (Emydosauria.)
1896 B.
Burckhardt, R. 1895 A.
Cope, E. D. 1869 M, pp. 32, 61.
1871 B.
1889 R, p. 863.
1891 N, p. 45.
1892 R.
1898 B, pp. 56, 73. (Loricata.)
1900 A, p. 161. (Loricata.)
Cuvier, G. 1834 A, ix, pp. 25-344, pls. ccxxix-ccxxxviii.
Delongchamps-Eudes, E. 1870 A.

Dollo, L. 1883 E.
Fürbringer, M. 1888 A.
1900 A, pp. 297, 527, 596, 649.
Gadow, H. 1896 A, p. 38.
1898 A. p. 18.
Gaupp, E. 1895 B.
Gegenbaur, C. 1864 A, pp. 32, 87.
1865 B, p. 32.
Günther, A. 1886 A, p. 444.
Haeckel, E. 1895, p. 358.
Hallmann, E. 1837 A, p. 16.
Hay, O. P. 1899 F, p. 682. (Loricata.)
Hoffmann, C. K. 1876 A.
1878 A.
1879 A, p. 102.
1890 B.
Hulke, J. W. 1888 A.
Huxley, T. H. 1859 B.
1870 A, p. 440.
1872 A, p. 214.
1875 B.
1876 B, xiii, pp. 430, 467, 514.
Kehner, F. A. 1876 A.
Koken, E. 1883 A, p. 792.
1887 A, p. 84.
1888 B.
Kükenthal, W. 1893 A.
Leidy, J. 1871 C, p. 367.
Lortet, L. 1892 A, p. 91.
Ludwig, R. 1877 A.
Lydekker, R. 1888 B, p. 42.
Lydekker, R. 1898 E, p. 189.
Marsh, O. C. 1877 E.
1885 D.
Mivart, St. G. 1886 A.
Müller, J. 1831 A, pp. 199, 238.
Nicholson and Lydekker 1889 A, p. 1180.
Owen, R. 1842 A, p. 65.
1845 B, p. 285.
1850 A.
1850 B, p. 521.
1860 A, p. 164.
1860 E, p. 271.
1866 A.
1878 A.
1879 A.
Parker, W. K. 1868 A, p. 126.
1879 B, p. 81.
1883 A.
Pictet, F. J. 1853 A, p. 475. ("Crocodiliens.")
Röse, C. 1893 B.
1895 A.
Seeley, H. G. 1888 H. p. 181.
Stannius, H. 1856 A.
Steinmann and Döderlein 1890 A, p. 651.
Tomes, C. S. 1898 A. p. 268.
Tornier, G. 1888 A.
Wiedersheim, R. 1889 A, p. 438.
Woodward, A. S. 1886 D.
1898 B, p. 216.
Zittel, K. A. 1890 A, pp. 450, 633, 647, 683.

Suborder PARASUCHIA Huxley.

Huxley, T. H. 1875 B, p. 427.
Baur, G. 1894 A, p. 123. (Phytosauria.)
Cope, E. D. 1869 M, pp. 32, 56. (Thecodontia.)
1889 R, p. 865.
1900 A, p. 161.
Fürbringer, M. 1900 A, p. 302.
Gadow, H. 1898 A. p. 19.
Haeckel, E. 1895 A. p. 364.
Koken, E. 1887 A, p. 98.
1888 B, p. 763.
Lydekker, R. 1888 B, p. 123.
1890 A, p. 235.
Marsh, O. C. 1895 C, p. 485.
1896 B, p. 59. (Belodontia.)
1896 D, p. 199. (Belodontia.)
Owen, R. 1860 A, p. 163. (Thecodontia.)
Woodward, A. S. 1898 B, p. 217.
Zittel, K. A. 1890 A, p. 637.

PHYTOSAURIDÆ.

Lydekker, R. 1888 B, p. 123.
Baur, G. 1886 G, p. 740. (Belodontidæ.)
1887 A, p. 487. (Belodontidæ.)
1887 C, p. 102. (Belodontidæ.)
Cope, E. D. 1898 B, p. 78. (Belodontidæ.)
Nicholson and Lydekker 1889 A, p. 1183. (Phytosauridæ.)

PHYTOSAURUS Jaeger. Type *P. cylindricodon* Jaeger.

Jaeger, G. F. 1828 A, p. 22.
Baur, G. 1886 G, p. 740. (Belodon.)
1887 A, p. 487. (Belodon.)
1894 A. (Phytosaurus.)
Cope, E. D. 1866 D. (Rhytidodon, emendation of Rutiodon.)
1869 M, p. 56. (Belodon.)
1870 I, p. 444. (Belodon.)
1879 A, p. 34. (Belodon.)
1888 U, p. 916. (Belodon.)
1889 E. (Belodon.)
Emmons, E. 1856 A, p. 80. (Rutiodon, type *R. carolinensis*.)
Fürbringer, M. 1900 A, p. 302.
Huxley, T. H. 1869 A.
1875 B.
Koken, E. 1887 A, p. 96.
1888 B, p. 764,
Lea, I. 1856 B, p. 123. (Centemodon.)
1856 A, p. 78. (Centemodon, type *C. sulcatus*.)
Leidy, J. 1856 J, p. 165. (Compsosaurus, type *C. priscus*.)
1856 L, p. 256. (Omosaurus, type *O. perplexus*.)
Lydekker, R. 1888 B, p. 123.

Lydekker, R. 1890 A, p. 235.
Marsh, O. C. 1877 E. (Belodon.)
1895 C, p. 485. (Belodon.)
1896 B, p. 61. (Belodon; Rhytidodon.)
1896 D, p. 199. (Belodon.)
Meyer, H. 1842, Neues Jahrb. Mineral., p. 302. (Belodon, type *B. plieningeri* Meyer.)
1855 A, p. 148. (Belodon.)
1861 A, pls. xxxviii-xlvii. (Belodon.)
1863 A, pls. xxxviii-xlii. (Belodon.)
1865 B, pls. xxiii-xxix. (Belodon.)
Nicholson and Lydekker 1889 A, p. 1183.
Pictet, F. J. 1853 A, p. 514.
Plieninger, Th. 1852 A. (Belodon.)
Quenstedt, F. A. 1850 B, p. 23.
1852 A, p. 110. (Belodon.)
Steinmann and Döderlein 1890 A, p. 652. (Belodon.)
Woodward, A. S. 1886 D, p. 300, fig. 5.
1898 B, p. 218. (Belodon.)
Zittel, K. A. 1890 A, p. 638. (Belodon.)

Phytosaurus buceros (Cope).

Cope, E. D. 1881 W, p. 922. (Belodon.)
1887 A, p. 217, pl. ii. (Belodon.)
1887 J. (Belodon.)
1888 U, p. 916, pl. xvii, fig. 1. (Belodon.)
1891 N, p. 46, fig. 23. (Belodon.)
1898 B, p. 72, fig. 24. (Belodon.)
Triassic; New Mexico.

Phytosaurus carolinensis (Emmons).

Emmons, E. 1856 A, p. 307, fig. 22; pl. viii, fig. 1. (Rutiodon.)
Cope, E. D. 1866 D. (Rhytidodon=Belodon.)
1869 M, pp. 25, 59. (Belodon.)
1870 I, p. 444. (Belodon.)
1871 M, p. 210. (Belodon.)
1875 V, p. 34. (Belodon.)
1877 E, p. 185. (Belodon.)
Dana, J. D. 1896 A, p. 754, fig. 1183. (Belodon.)
Emmons, E. 1856 A, p. 308 (Rutiodon, or Clepsisaurus, carolinensis); p. 318, figures (Paleosaurus sulcatus).
1857 A, p. 82, figs. 52-56. (Rutiodon.)
1858 A, p. 78. (Rutiodon.)
1860 A. p. 175, figs. 157, 160[1]. (Rutiodon.)
Lea, I. 1856 B, p. 123. (Centemodon sulcatus.)
1856 A, p. 78. (Centemodon sulcatus.)
Leidy, J. 1856 L, p. 256. (Omosaurus perplexus.)
1857 A, p. 272. (Omosaurus perplexus.)
Marsh, O. C. 1896 B, p. 60. (Rhytidodon.)
Wheatley, C. M. 1861 A, p. 44. (Centemodon sulcatus.)
Triassic; North Carolina

Phytosaurus leaii (Emmons).

Emmons, E. 1856 A, p. 299. (Clepsisaurus.)
Cope, E. D. 1869 M, p. 59. (Belodon.)
1870 I, p. 444. (Belodon.)
Cope, E. D. 1871 M. ("Clepsysaurus.")
1875 V, p. 35. (Belodon.)
Emmons, E. 1857 A, p. 79, text fig. 51; pl. x. (Clepsisaurus.)
Triassic; North Carolina.

Phytosaurus lepturus (Cope).

Cope, E. D. 1869 M, p. 59, pl. xiv, figs. 1-14. (Belodon.)
1870 I, p. 444.
1870 S, p. 563.
Triassic; Pennsylvania.

Phytosaurus priscus (Leidy).

Leidy, J. 1856 J, p. 165. (Compsosaurus.)
Dana, J. D. 1896 A, p. 754, fig. 1182. (Belodon.)
Cope, E. D. 1869 M, p. 59, pl. xiv, figs. 15-25. (Belodon.)
1870 I, p. 444. (Belodon.)
1871 M, p. 210. (Belodon.)
1875 V, p. 34, pl. viii, fig. 5. (Belodon.)
1877 E, p. 185. (Belodon.)
Emmons, E. 1856 A, p. 299 (Clepsisaurus pennsylvanicus, in part); p. 318, figures (Palæosaurus carolinensis).
1857 A, pp. 65-79, figs. 37-50 (Clepsisaurus pennsylvanicus, in part); p. 86, figs. 57, 58, 60 (Palæosaurus carolinensis).
Hills, R. C. 1880 A. (Belodon.)
Leidy, J. 1856 L, p. 255. (Palæosaurus.)
1857 A, p. 271. (Palæosaurus.)
Triassic; North Carolina.

Phytosaurus rostratus (Marsh).

Marsh, O. C. 1896 B, p. 61, fig. 2. (Rhytidodon.)
1900 A, p. 23. (Rhytidodon.)
Triassic; North Carolina.

Phytosaurus scolopax (Cope).

Cope, E. D. 1881 W, p. 923. (Belodon.)
1887 A, p. 221. (Belodon.)
Triassic; New Mexico.

Phytosaurus serridens (Leidy).

Leidy, J. 1859 E. (Eurydorus.)
Cope, E D. 1866 D, p. 249. (Belodon.)
1869 M, pp. 57, 58. (Belodon.)
Wheatley, C. M. 1861 A, p. 44. (Eurydorus.)
Triassic; Pennsylvania.

Phytosaurus superciliosus (Cope).

Cope, E. D. 1893 A, p. 12, pl. i, figs. 1-10. (Belodon.)
Triassic; Texas.

Phytosaurus validus (Marsh).

Marsh, O. C. 1893 G, p. 170. (Belodon. No description.)
1896 B, p. 59. (No description.)
Triassic; Connecticut.

EPISCOPOSAURUS Cope. Type *E. horridus* Cope.

Cope, E. D. 1887 A, p. 213.
1896 I, p. 123.
Marsh, O. C. 1896 B, p. 62.
Nicholson and Lydekker 1889 A, p. 1184.
Zittel, K. A. 1890 A, p, 644.

Episcoposaurus haplocerus Cope.

Cope, E. D. 1892 J, p. 129.
Cope, E. D. 1892 E, p. 257.
Triassic; Texas.

Episcoposaurus horridus Cope.

Cope, E. D. 1887 A, p. 213.
1892 E, p. 257.
Triassic; New Mexico.

Suborder AËTOSAURIA Nich. and Lydek.

Nicholson and Lydekker 1889 A, p. 1182.
Baur, G. 1894 A, p. 323.
Cope, E. D. 1898 B, p. 73. (Pseudosuchia.)
Fraas, O. 1867 A. (Genus Dyoplax.)
Fürbringer, M. 1900 A, p. 305. (Pseudosuchia.)
Gadow, H. 1898 A, p. 19. (Pseudosuchia.)
Haeckel, E. 1895 A, p. 364.
Marsh, O. C. 1895 C, p. 484.
Zittel, K. A. 1890 A, p. 644. (Pseudosuchia.)

AËTOSAURIDÆ.

Baur, J. 1887 C, p. 102. (Aethosauridæ.)
Nicholson and Lydekker 1889 A, p. 1182.

TYPOTHORAX Cope. Type *T. coccinarum* Cope.

Cope, E. D. 1875 R, p. 265.
1875 F, p. 84.
1877 K, p. 29.
1887 A, p. 210.
1887 E.
1896 I, p. 123.
Marsh, O. C. 1896 B, p. 62.
Nicholson and Lydekker 1889 A, pp. 1137, 1183.
Steinmann and Döderlein 1890 A, p. 658.
Zittel, K. A. 1890 A, p. 644.

Typothorax coccinarum Cope.

Cope, E. D. 1875 R, p. 265. (In part.)
1875 A.
1875 F, p. 84.
1877 K, p. 30, pl. xxii, figs. 1-9.
1887 A, p. 210, pl. i.
1887 E.
1896 I, p. 123.
Triassic; New Mexico.

STEGOMUS Marsh. Type *S. arcuatus* Marsh.

Marsh, O. C. 1896 B, p. 59.
Cope, E. D. 1896 I, p. 123.
Regarded by Professor Marsh as belonging to the *Parasuchia*.

Stegomus arcuatus Marsh.

Marsh, O. C. 1896 B, p. 60, pl. i.
Triassic; Connecticut.

Suborder EUSUCHIA Huxley.

Huxley, T. H. 1875 B.
Cope, E. D. 1871 B, p. 235. (Procœlia.)
1889 R, p. 864.
1891 N, p. 45.
1898 B, p. 73.
1900 A, p. 161.
Deslongchamps-Eudes, J. A. 1864 A. ("Téléosauriens.")
Fürbringer, M. 1900 A, p. 306.
Gadow, H. 1896 A, p. 38. (Crocodilia.)
1898 A, p. 19.
Haeckel, E. 1895 A, pp. 364, 367. (Typosuchia.)
Lydekker, R. 1888 B, p. 43.
Nicholson and Lydekker 1889 A, p. 1185.
Owen, R. 1860 A, p. 165. (Procœlia.)
Parker, W. K. 1868 A, p. 126. (Crocodilia.)
Woodward, A. S. 1898 B, p. 223.
Zittel, K. A. 1890 A, p. 647.

CROCODYLIDÆ.

Gray, J. E., 1825, Annals Philos. (2), x, p. 195. (Crocodilidæ.)
The usual way of spelling this name is *Crocodilidæ*.
Bemmelen, J. F. 1896 A, p. 332.
Boulenger, G. A. 1889 A, p. 274.
Calori, L. 1894 A.
Cope, E. D. 1871 B.
1900 A, p. 161.
Deslongchamps-Eudes, J. A. 1864, A. ("Crocodiliens.")
Gaupp, E. 1895 B.
Gegenbaur, C. 1898 A.
Hoffmann, C. K. 1890 B.
Huxley, T. H. 1859 B, p. 5 (Crocodilidæ); p. 2 (Alligatoridæ).
1872 A, p. 221. (Alligatoridæ, Crocodilidæ.)
Lydekker, R. 1888 B, p. 44.
Nicholson and Lydekker 1889 A, p. 1192.
Röse, C. 1892 C.
Steinmann and Döderlein 1890 A, p. 657.
Zittel, K. A. 1890 A, p. 681 (Crocodilidæ); p. 679 (Alligatoridæ).

Crocodylus Laurenti. Type *C. niloticus* Linn.

Laurenti, J. N. 1768, Synop. Rept., p. 53.
The name of this genus is usually spelled *Crocodilus*. The above form is the original one.
Boulenger, G. A. 1889 A, p. 277.
1896 B.
Cope, E. D. 1867 C, p. 143. (Thecachampsa, type *T. contusor*.)
1869 G, p. 11. (Thecachampsa.)
1869 M, pp. 62, 231. (Thecachampsa.)
1870 D, p. 174. (Thecachampsa.)
1872 V, p. 554. (Ichthyosuchus.)
1875 C, p. 31.
1882 J, p. 983. (Crocodilus, Thecachampsa.)
1884 O, p. 151.
1900 A, p. 171.
Cuvier, G. 1834 A, ix, pp. 25–344, with plates.
Gegenbaur, C. 1898 A.
Giebel, C. G. 1877 A, p. 105.
Hoffmann, C. K. 1890 B.
Huxley, T. H. 1859 B, p. 6.
1869 B.
1872 A, p. 217.
1875 B.
Klein, E. F. 1863 A.
Kükenthal, W. 1893 A.
Leidy, J. 1871 C, p. 368.
1872 B, p. 366.
Ludwig, R. 1877 A.
Lydekker, R. 1888 B, p. 53.
Marsh, O. C. 1870 C, p. 98. (Thecachampsa; not tenable.)
Miall, L. C. 1878 C.
Nicholson and Lydekker 1889 A, p. 1194 (Thecachampsa); p. 1195 (Crocodilus).
Owen, R. 1847 B, p. 283.
1850 B, p. 521.
1866 A.
Parker, W. K. 1883 A.
Segond, L. A. 1873 A, p. 10. ("Crocodile.")
Steinmann and Döderlein 1890 A, p. 657.
Toula and Kail 1885 A.
Woodward, A. S. 1886 D.
Zittel, K. A. 1890 A, p. 682 (Crocodilus); p. 683 (Thecachampsa).

Crocodylus acer Cope.

Cope, E. D. 1882 J, pp. 982. 986, fig. 2.
1884 O, pp. 152, 154, pl. xxiii, figs. 1, 2.
Zittel, K. A. 1890 A, p. 682, fig. 604.
Eocene (Manti beds); Utah.

Crocodylus affinis Marsh.

Marsh, O. C. 1871 B, p. 454.
Cope, E. D. 1882 J, p. 984, fig. 4; p. 986.
1884 O, pp. 152, 162, pl. xxi, figs. 1–3.
Leidy, J. 1872 B, p. 366.
Eocene (Bridger); Wyoming.

Crocodylus antiquus Leidy.

Leidy, J. 1852 K, pl. xvi. (Crocodilus.)
Cope, E. D. 1867 C, p. 143. (Thecachampsa contusor.)
1869 G, p. 12. (Thecachampsa.)
1869 M, p. 64, fig. 16. (Thecachampsa.)
1882 J, p. 983.
Emmons, E. 1858 B, p. 215, fig. 35 A.
Eocene; Virginia.

Crocodylus aptus Leidy.

Leidy, J. 1869 B, p. 67.
Cope, E. D. 1844 O, p. 162.
Leidy, J. 1871 C, p. 368.
1872 B, p. 366.
1873 B, p. 126, pl. viii, fig. 2.
Eocene (Wasatch?); Wyoming.

Crocodylus brevicollis Marsh.

Marsh, O. C. 1871 B, p. 456.
King, C. 1878 A, p. 405.
Eocene (Bridger); Wyoming.

Crocodylus chamensis Cope.

Cope, E. D. 1874 O, p. 15. (Alligator.)
1875 C, p. 33. (C. heterodon, in part.)
1877 K. p. 67, pl. xxxii, figs. 1–22.
1884 O, p. 166.
Eocene (Wasatch); New Mexico.

Crocodylus clavis Cope.

Cope, E. D. 1872 R, p. 485.
1873 E, p. 612.
1882 J, p. 983, fig. 5; p. 986.
1884 O, pp. 152, 157, pl. xxi, figs. 4–9; pl. xxii.
Osborn, Scott, and Speir 1878 A, p. 93.
Eocene (Bridger); Wyoming.

Crocodylus elliotti Leidy.

Leidy, J. 1870 N.
Cope, E. D. 1873 E, p. 612.
1875 C, p. 33.
1877 K, p. 65, pl. xxxi, figs. 6–17.
1882 J, pp. 983, 986.
1884 O, p. 152. (Thecachampsa.)
King, C. 1878 A, p. 405.
Leidy, J. 1870 R.
1871 C, p. 368.
1872 B, p. 366.
1873 B, p. 126, pl. viii, figs. 4–8.
Marsh, O. C. 1871 B, p. 454.
Osborn, Scott, and Speir 1878 A, p. 85.
Zittel, K. A. 1890 A, p. 683. (Thecachampsa.)
Eocene (Bridger); Wyoming, New Mexico.

Crocodylus fastigiatus Leidy.

Leidy, J. 1851 G, p. 327.
Cope, E. D. 1869 M, p. 65. (Thecachampsa.)
1882 J, p. 986.
Eocene; Virginia.

Crocodylus grinnellii Marsh.

Marsh, O. C. 1871 B, p. 455.
Cope, E. D. 1873 E, p. 613.
Leidy, J. 1872 B, p. 366.
Marsh, O. C. 1871 G, p. 105.
Eocene (Bridger); Wyoming.

Crocodylus grypus Cope.

Cope, E. D. 1875 C, p. 32.
1877 K, p. 63, pl. xxx.
1882 J, p. 983.
King, C, 1878 A, p. 377.
Eocene (Bridger?); New Mexico.

Crocodylus heterodon Cope.

Cope, E. D. 1872 T, p. 544. (Alligator.)
1873 E, p. 614. (Alligator.)
1875 C, p. 34.
1882 J, pp. 983, 986.
1884 O, p. 164, pl. xxiii *a*, figs. 10–18.
King, C. 1878 A, p. 376 (Alligator); p. 377 (Crocodilus).
Osborn, Scott, and Speir 1878 A, p. 93.
Eocene (Wasatch); Wyoming.

Crocodylus humilis Leidy.

Leidy, J. 1856 F, p. 73.
Cope, E. D. 1869 M, p. 82.
1874 C, p. 27. (Bottosaurus?)
1875 E, p. 254. (Bottosaurus?)
1877 G, p. 573.
Leidy, J. 1856 C, p. 120.
1860 A, p. 146, pl. xi, figs. 9–19.
Marsh, O. C. 1897 C, p. 527.
Cretaceous (Laramie); Montana, Colorado.

Crocodylus liodon Marsh.

Marsh, O. C. 1871 B, p. 454.
Cope, E. D. 1873 E, p. 613.
1875 C, p. 33.
1877 K, p. 67, pl. xxi, figs. 18–23. (C. liodon?)
1884 O, p. 153.
Leidy, J. 1872 B.
Marsh, O. C. 1871 G, p. 104.
Eocene; Wyoming, New Mexico.

Crocodylus marylandicus Clark

Clark, W. B. 1895 A, p. 4.
1897 A, p. 58, pl. viii, fig. 1.
Eocene; Maryland.

Crocodylus parvus Osb., Scott, and Speir.

Osborn, Scott, and Speir 1878 A, p. 91.
Eocene (Bridger); Wyoming.

Crocodylus polyodon Cope.

Cope, E. D. 1873 E, p. 614. (Diplocynodus.
1882 J, p. 981.
1884 O, p. 154, pl. xxiii*a*, figs. 1, 2.
Eocene (Bridger); Wyoming.

Crocodylus rugosus (Emmons).

Emmons, E. 1858 B, p. 219, figs. 38, 39. (Polyptychodon.)
Cope, E. D. 1871 M, p. 210. (Thecachampsa.)
1875 V, p. 88, pl. viii, fig. 3. (Thecachampsa.)
Emmons, E. 1860 A, p. 238, fig. 180^{7}. (Polyptychodon.)
Leidy, J. 1865 A. pp. 18, 116. (Polyptychodon.)
Eocene; North Carolina.

Crocodylus sericodon Cope.

Cope, E. D. 1867 C, p. 143. (Thecachampsa.)
1869 B, p. 738. (Thecachampsa.)
1869 G, p. 12. (Thecachampsa.)
1869 K, p. 91. (Thecachampsa.)
1869 M, p. 64, pl. v, figs. 7, 8. (Thecachampsa.)
1875 H, p. 363. (Thecachampsa.)
1882 J, p. 984.
Miocene; Maryland, New Jersey.

Crocodylus serratus Cope.

Cope, E. D. 1872 Y, p. 171. (Thecachampsa.)
1882 J, p. 986.
Eocene; New Jersey.

Crocodylus sicarius Cope.

Cope, E. D. 1869 G, p. 12. (Thecachampsa.)
1869 K, p. 91. (Thecachampsa.)
1869 M, p. 63, pl. v, fig. 6. (Thecachampsa.)
1882 J, p. 984.
Miocene; Maryland.

Crocodylus solaris Marsh.

Marsh, O. C. 1877 D, p. 254.
Pliocene?; South Dakota.

Crocodylus squankensis Marsh.

Marsh, O. C. 1869 A, p. 391. (Thecachampsa.)
Cope, E. D. 1871 C, p. 65. (Thecachampsa.)
1872 Y, p. 17. (Thecachampsa.)
1882 J, p. 983.
Marsh, O. C. 1870 C, p. 98. (Thecachampsa.)
Eocene; New Jersey.

Crocodylus stavelianus Cope.

Cope, E. D. 1885 Q.
Eocene (Puerco); New Mexico.

Crocodylus subulatus Cope.

Cope, E. D. 1872 V, p. 554. [Crocodilus (Ichthyosuchus.)]
1873 E, p. 613. (Diplocynodus.)
1877 K, p. 60. (Diplocynodus.)
1882 J, pp. 983, 986.
1884 O, p. 152, pl. xxiii*a*, figs. 4–9.
Eocene (Bridger); Wyoming.

Crocodylus sulciferus Cope.

Cope, E. D. 1872 V, p. 555.
1873 E, p. 612.
1882 J, p. 983.
1884 O, p. 157, pl. xxiii*a*, fig. 23.
Eocene (Bridger); Wyoming.

Crocodylus wheelerii Cope.

Cope, E. D. 1875 C, p. 33.
1875 F, p. 95. (C. veelerii.)
1877 K, p. 64, pl. xxxi, figs. 1–5
1882 J, p. 983.
Eocene; New Mexico.

The following references are given to notices of undetermined and undescribed remains of *Crocodylus:*

Cope, E. D. 1881 D, p. 184. Eocene; Wyoming.
1882 E, p. 143. Eocene.
Leidy, J. 1865 A, p. 116. Eocene; New Jersey, North Carolina.
Wyman, J. 1850 B, p. 233, fig. 8. Eocene; South Carolina.

LIMNOSAURUS Marsh. Type *Crocodilus ziphodon* Marsh.

Marsh, O. C. 1872 K, p. 309.

Limnosaurus ziphodon Marsh.

Marsh, O. C. 1871 G, p. 104. (Crocodilus.)
Cope E. D. 1882 J, p. 986. (Crocodilus xiphodon.)
King, C. 1878 A, p. 405.
Leidy, J. 1872 B, p. 366. (Crocodilus.)
Marsh, O. C. 1871 B, p. 453. (Crocodilus.)
1872 K, p. 309.
Eocene; Wyoming.

POLYDECTES Cope. Type *P. biturgidus* Cope.

Cope, E. D. 1869 I.
1870 D, p. 271.
1875 V, p. 33.

Polydectes biturgidus Cope.

Cope, E. D. 1869 I.
1870 D, p. 271.
1875 V, p. 33, pl. viii, fig. 2.
Cretaceous?; North Carolina.

ALLIGATOR Cuvier. Type *A. lucius* Cuvier = *Crocodilus mississippiensis* Daudin.

Cuvier, G., 1807, Ann. Mus., x, p. 30.
Boulenger, G. A. 1889 A, p. 289.
1896 B.
Clarke, S. F. 1891 A.
Cope, E. D. 1873 E, p. 614.
1900 A, pp. 161, 164.
Hoffmann, C. K. 1890 B.
Huxley, T. H. 1859 A, p. 3.
Ludwig, R. 1877 A.
Lydekker, R. 1889 B, p. 44.
Nicholson and Lydekker 1889 A, p. 1196.

Alligator mississippiensis Daudin.

Daudin, F. M., 1802, Hist. Nat. Rept., ii, p. 412. (Crocodilus.)
Boulenger, G. A. 1889 A, p. 290.
Leidy, J. 1860 B, p. 122, pl. xxvii, figs. 6, 7.
1889 E, p. 31.
1892 A.
Recent and in Peace Creek beds; Florida: Pleistocene; South Carolina.

BOTTOSAURUS Agassiz. Type *Crocodilus macrorhyncus* Harlan=*Bottosaurus harlani* Meyer.

Agassiz, L., 1849, Proc. Acad. Nat. Sci. Phila., iv, p. 169.
Cope, E. D. 1869 K, p. 90.
1869 M, pp. 62, 65.
Leidy, J. 1865 A, p. 12.
Zittel, K. A. 1890 A, p. 679.

Bottosaurus harlani (Meyer).

Meyer, H., 1832, Palæologica, p. 108. (Crocodilus.)
Cope, E. D. 1867 E, p. 26.
1869 B, p. 736.
1869 M, pp. 65, 231. (In part).
1871 G, p. 48. (B. macrorhynchus.)
1875 E, p. 253. (B. macrorhynchus.)
1875 V, p. 48. (B. macrorhynchus.)
De Kay, J. E. 1842 A, p. 27. (Crocodilus macrorhynchus.)
Gibbes, R. W. 1851 A, p. 7. (C. macrorhynchus.)
Giebel, C. G. 1847 B, p. 122. (C. macrorhynchus.)
Harlan, R. 1824 B, pl. i ("Crocodile").
1834 B, p. 76. (C. macrorhyncus.)
Harlan, R. 1835 B, p. 280. (C. macrorhyncus.)
1835 I, p. 380, with plate. (C. macrorhyncus.)
Leidy, J. 1865 A, pp. 12, 115, pl. iv, figs. 19–21; pl. xvii, figs. 11–14. (B. harlani, in part.)
1865 D, p. 67. (B. harlani.)
Cretaceous; New Jersey.

Bottosaurus perrugosus Cope.

Cope, E. D. 1874 C, p. 26.
1874 B, p. 452.
1875 E, pp. 68, 253, pl. vi, figs. 5–8.
Lambe, L. M. 1899 A, p. 69. (Identification doubtful.)
Cretaceous; Colorado, British America?.

Bottosaurus tuberculatus Cope.

Cope, E. D. 1869 M, p. 230.
1869 M, p. 65. (B. harlani, in part.)
1871 G, p. 48.
Cretaceous; New Jersey.

DIPLOCYNODON Pomel. Type *D. ratelii* Pomel.

Pomel, A. 1847 C, p. 383.
Cope, E. D. 1869 M, p. 62. (Plerodon.)
1877 K, p. 60. (Diplocynodus.)
1882 J, p. 986. (Plerodon.)
Lydekker, R. 1886 E, p. 211. (Plerodon.)
1888 B, p. 45.
Meyer, H., 1839, Neues Jahrb. Mineral., p. 77. (Plerodon.)
1857, Neues Jahrb. Mineral., p. 538. (Pleurodon.)
Nicholson and Lydekker 1889 A, p. 1195.
Zittel, K. A. 1890 A, p. 679.

Diplocynodon sphenops (Cope).

Cope, E. D. 1875 C, p. 31. (Diplocynodus.)
1877 K, p. 60, pl. xxix. (Diplocynodus.)
1882 J, p. 986. (Plerodon.)
King, C. 1878 A, p. 377. (Diplocynodus.)
Eocene; New Mexico.

GAVIALIDÆ.

Huxley, T. H. 1859 B.
Boulenger, G. A. 1889 A, p. 274. (Crocodilidæ, in part.)
Huxley, T. H. 1872 A, p. 222.
Zittel, K. A. 1890 A, p. 674 (Gavialidæ); p. 672 (Rhynchosuchidæ).

GAVIALIS Oppel. Type *G. gangeticus* Linn.

Oppel, M., 1811, Ordnungen der Reptilien, p. 19.
Boulenger, G. A. 1889 A, p. 275.
Cope, E. D. 1900 A, p. 162.
Lydekker, R. 1888 B, p. 65. (Garialis.)
Owen, R. 1850 B, p. 521.
Toula and Kail, 1885 A.
Zittel, K. A. 1890 A, p. 674.

Gavialis fraterculus Cope.

Cope, E. D. 1869 M, p. 82. (Hyposaurus.)
Cope, E. D. 1869 B, p. 736. (Hyposaurus; no description.)
1875 E, p. 254.
1875 K.
Cretaceous; New Jersey.

Gavialis minor Marsh.

Marsh, O. C. 1870 C.
Cope, E. D. 1872 Y, p. 18. (Thecachampsa?.)
Eocene; New Jersey.

HETERODONTOSUCHUS Lucas. Type *H. ganei* Lucas.

Lucas, F. A. 1898 A.

Heterodontosuchus ganei Lucas.

Lucas, F. A. 1898 A.
Triassic; Utah.

THORACOSAURUS Leidy. Type *T. grandis* Leidy = *Gavialis neocesariensis* De Kay.

Leidy, J. 1852 B.
Agassiz, L. 1849 A. (Sphenosaurus, type *Crocodilus clavirostris*; not of Meyer, 1847.)
Cope, E. D. 1869 M, p. 79.
1900 A, p. 161.
Gibbes, R. W. 1851 A, pp. 7, 13.
Koken, E. 1888 B.
Leidy, J. 1865 A, p. 5.
Nicholson and Lydekker 1889 A, p. 1193.
Steinmann and Döderlein 1890 A, p. 657. (Thoracosuchus.)
Zittel, K. A. 1890 A, p. 672.

Thoracosaurus neocesariensis (De Kay).

De Kay, J. E. 1842 A, p. 28, pl. xxii, fig. 59. (Gavialis.)
Agassiz, L. 1849 A. (Sphenosaurus clavirostris.)
Cope, E. D. 1867 E, p. 26. (T. neocæsariensis.)
1869 B, p. 736. (T. neocæsariensis.)
1869 M, pp. 68, 79. (T. neocæsariensis.)
1875 E, p. 250. (T. neocæsariensis.)
De Kay, J. E. 1833 A, pl. iii, figs. 7–11. ("Gavial.")
Gibbes, R. W. 1850 A. (Sphenosaurus clavirostris.)
1851 A, p. 7 (Croc. clavirostris); p. 13 (Croc. basifissus).
Giebel, C. G. 1847 B, p. 122. (Croc. clavirostris.)
Koken, E. 1888 B, p. 757.
Leidy, J. 1852 B. (Thoracosaurus grandis.)
1852 K, p. 135. (Croc. dekayi, C. basifissus.)
1865 A, pp. 5, 115, pl. i, figs. 1–6; pl. ii, figs. 1–3; pl. iii, figs. 5–11.
1865 D, p. 67.
Morton, S. G. 1844 A. [Crocodilus (Gavialis?) clavirostris.]
1845 A. (Croc. clavirostris.)
Owen R. 1849 A, p. 381, pl. x, figs. 1, 2. (Croc. basifissus.)
1860 A, p. 165. (Croc. basifissus.)
Woodward, A. S. 1890 A, p. 393.
Zittel, K. A. 1890 A, p. 673.
Cretaceous; New Jersey.

HOLOPS Cope. Type *H. brevispinis* Cope.

Cope, E. D. 1869 H, p. 123.
1869 M, pp. 62, 67, 231.
1900 A, p. 162.
Huxley, T. H. 1875 B.
Lydekker, R. 1886 E, p. 211.
Nicholson and Lydekker 1889 A, p. 1193.
Zittel, K. A. 1890 A, p. 673.

Holops basitruncatus (Owen).

Owen, R. 1849 A, p. 381, pl. x, figs. 3, 4. (Crocodilus.)
Cope, E. D. 1869 B, p. 736. (Thoracosaurus tenebrosus.)
Cope, E. D. 1869 H, p. 123. (H. tenebrosus.)
1869 M, pp. 67, 77, fig. 19, p. 231, pl. iv, figs. 8, 9 (H. basitruncatus; called erroneously on plate Bottosaurus harlani); p. 78 (H. tenebrosus).
1875 E, p. 253.
Gibbes, R. W. 1851 A, p. 13. (Crocodilus.)
Leidy, J. 1852 K, p. 135. (Crocodilus.)
1865 A, p. 14 (syn. of Bottosaurus harlani); p. 115, pl. iii, figs. 12–15 (Crocodilus tenebrosus).
Owen, R. 1860 A. p. 165. (Crocodilus.)
Eocene; New Jersey.

Holops brevispinis Cope.

Cope, E. D. 1869 H, p. 123.
1869 B, p. 736. (Thoracosaurus; no description.)
1869 M, p. 69, pl. i, fig. 13; pl. iv, figs. 4–6.
1875 E, p. 252.
Cretaceous; New Jersey.

Holops cordatus Cope.

Cope, E. D. 1869 M, p. 73, fig. 18; pl. iv, fig. 1.
1875 E, p. 253.
Cretaceous; New Jersey.

Holops glyptodon Cope.

Cope, E. D. 1869 M, pp. 74, 231.
1869 B, p. 736. (Thoracosaurus; no description.)
1875 E, p. 253.
Cretaceous; New Jersey.

Holops obscurus (Leidy).

Leidy, J. 1865 A, pp. 15, 16, 115, pl. ii, figs. 4, 5. (Crocodilus.)
Cope, E. D. 1867 E, p. 26. (Thoracosaurus.)
1869 B, p. 736. (Thoracosaurus.)
1869 H, p. 123.
1869 M, pp. 68, 75, 231, pl. iv, figs. 1–3.
1871 C, p. 75.
1875 E, p. 253.
Leidy, J. 1865 A, pl. i, figs. 7–9.
Lydekker, R. 1886 E, p. 211.
Cretaceous; New Jersey.

Holops pneumaticus Cope.

Cope, E. D. 1872 X.
1875 E, p. 250.
Cretaceous; New Jersey.

GONIOPHOLIDÆ.

Lydekker, R. 1888 B, p. 76. (Goniopholididæ.)
1890 A, p. 229. (Goniopholididæ.)
Nicholson and Lydekker 1889 A, p. 1189.
Zittel, K. A. 1890 A, p. 676.

GONIOPHOLIS Owen. Type *G. crassidens* Owen.

Owen, R. 1842 A, p. 69.
Cope, E. D. 1878 H p. 391. (Amphicotylus, type *A. lucasii.*)
Lydekker, R. 1888 B, p. 79.
1890 A, p. 229.
Marsh, O. C. 1877 D, p. 254. (Diplosaurus, type *D. felix.*)
1877 E. (Diplosaurus.)
1896 B, p. 62. (Diplosaurus.)
Nicholson and Lydekker 1889 A, p. 1191.
Owen, R. 1878 A.
1879 A.
Zittel, K. A. 1890 A, p. 676.

Goniopholis felix (Marsh).

Marsh, O. C. 1877 D, p. 254. (Diplosaurus.)
King, C. 1878 A, p. 346. (Diplosaurus.)
Marsh, O. C. 1896 B, p. 61, fig. 2. (Diplosaurus.)
1897 C, p. 507, fig. 62.

Zittel, K. A. 1890 A, p. 677. (Goniopholis.)
Jurassic; Colorado.

Goniopholis lucasii Cope.

Cope, E. D. 1878 H, p. 391. (Amphicotylus.)
1888 Y.
Zittel, K. A. 1890 A, p. 677.
Jurassic; Colorado.

Goniopholis vebbianus (Cope).

Cope, E. D. 1872 H, p. 310. (Hyposaurus.)
1872 F, p. 327. (Hyposaurus vebbii.)
1874 C, p. 26. (H. vebbii.)
1875 E, pp. 52, 67, 250 (H. vebbii); pl. ix, figs. 8–8*d* (H. vebbianus).
Marsh, O. C. 1877 D, p. 254. (Diplosaurus vebbii.)
Williston, S. W. 1898 D, p. 78. (Hyposaurus.)
Zittel, K. A. 1890 A, p. 677. (Goniopholis vebbii.)
Cretaceous (Benton); Kansas.

HYPOSAURUS Owen. Type *H. rogersii* Owen

Owen, R. 1849 A, p. 383.
Cope, E. D. 1866 F, p. 111.
1869 M, p. 80.
1875 K.
Gibbes, R. W. 1851 A, p. 13.
Lydekker, R. 1888 B, p. 90.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1190.
Zittel, K. A. 1890 A, pp. 672, 676.

Hyposaurus ferox Marsh.

Marsh, O. C. 1871 G, p. 104.
Cretaceous; New Jersey.

Hyposaurus rogersii Owen.

Owen, R. 1849 A, p. 383, pl. xi, figs. 7–10.
Cope, E. D. 1867 E, p. 26.
1869 B, p. 736.
1869 M, p. 80, pl. iv, figs. 10, 11.
1875 E, p. 250.
Gibbes, R. W. 1851 A, p. 9, pl. iii, fig. 13. (Holcodus acutidens, New Jersey specimen, *fide* Leidy.)
Leidy, J. 1865 A, pp. 18, 116, pl. iii, figs. 4, 16–21; pl. iv, figs. 1–12.
1865 D, p. 68.
Williston, S. W. 1894 B, p. 3, pl. i, figs. 4, 5. (Identification doubtful.)
1898 D, p. 76, figs. 3, 4. (Identification doubtful.)
Cretaceous, New Jersey, Kansas.

Pliogonodon Leidy. Type *P. priscus* Leidy.

- *Leidy, J.* 1856 L, p. 255.
  - 1857 A, p. 271.
- Zittel, K. A. 1890 A, p. 620. (Syn.? of Mosasaurus.)

A genus of uncertain affinities.

Pliogonodon priscus Leidy.

- *Leidy, J.* 1856 L, p. 255.
- Cope, E. D. 1875, V, p. 33.
- Emmons, E. 1858 B, p. 228, figs 43, 44. (P. nobilis.)
- Leidy, J. 1857 A, p. 271.
  - 1865 A, pp. 103, 119.

Miocene?; North Carolina.

Class AVES Linn.

- *Linnæus, C.*, 1758, Syst. Nat., ed. x, p. 78.
- Ahlborn, F. 1896 A.
- Baur, G. 1883 A.
  - 1884 A.
  - 1884 B.
  - 1884 E.
  - 1885 A.
  - 1885 B.
  - 1885 C.
  - 1886 B.
  - 1887 A.
- Blanchard, É. 1859 A.
  - 1860 A.
- Burckhardt, R. 1895 A.
- Calori, L. 1894 A.
- Cope, E. D. 1869 M, pp. 4, 236.
  - 1885 G.
  - 1889 R, pp. 863, 869.
  - 1891 N, p. 53.
  - 1898 B, p. 83.
- Coues, E. 1884 A.
- Dames, W. 1884 A.
- Dollo, L. 1883 B.
- Edwards, A. M. 1868 A.
  - 1869 A.
- Fürbringer, M. 1885 A.
  - 1888 A.
  - 1889 A.
  - 1890 A.
  - 1892 A.
  - 1896 A.
- Gadow, H. 1888 A.
  - 1889 A, p. 474.
  - 1891 A.
  - 1892 A.
  - 1896 A, p. 42.
  - 1896 B.
- Gaupp, E. 1900 A.
- Gegenbaur, C. 1864 A.
  - 1865 A.
  - 1898 A.
- Giebel, C. G. 1866 A.
- Haeckel, E. 1895 A, p. 400.
- Hallmann, E. 1837 A, pp. 14, 32.
- Hoffmann, C. K. 1879 A.
- Humphrey, G. M. 1866 A.
- Hurst, C. H. 1893 A.
- Huxley, T. H. 1867 A.
  - 1868 A.
  - 1870 A.
  - 1870 C.
  - 1872 A, pp. 168, 233.
  - 1876 B, xiii, pp. 468, 514.
- Jeffries, J. A. 1881 A.
- Jeffries, J. A. 1882 A.
- Köstlin, O. 1844 A.
- Leidy, J. 1871 C, p. 365.
- Lucas, F. A. 1899 C, p. 323.
- Lydekker, R. 1891 A.
- Magnus, H. 1869 A
- Marsh, O. C. 1877 E.
- Marshall, W. 1872 A.
- Mehnert, E. 1887 A.
- Morse, E. S. 1871 A.
  - 1872 A.
  - 1880 A.
- Newton, A. 1868 A.
  - 1875 A.
  - 1896 A.
- Nicholson and Lydekker 1889 A, p. 1206.
- Osborn, H. F. 1900 G, p. 777.
- Owen, R. 1864 C.
  - 1866 B.
  - 1873 C.
- Parker, W. K. 1864 A.
  - 1870 A.
  - 1875 A.
  - 1875 B.
  - 1876 A.
  - 1878 B.
  - 1879 B, p. 81.
  - 1884 A.
  - 1887 A.
  - 1889 A.
  - 1891 A.
  - 1891 B.
- Pavlow, A. 1885 A.
- Schenk, F. 1897 A.
- Segond, L. A. 1864 A.
  - 1865 A.
- Selenka, E. 1869 A.
- Shufeldt, R. W. 1885 A.
  - 1886 A.
  - 1886 B.
  - 1886 C.
  - 1899 A, p. 101.
- Steinmann and Döderlein 1890 A, p. 670.
- Stejneger, L. 1885 A.
- Vetter, B. 1885 A.
- Wiedersheim, R. 1884 A.
- Wildermuth, H. A. 1877 A.
- Woodward, A S. 1898 B, p. 231.
- Woodward, H. 1874 A.
  - 1874 B.
  - 1885 C.
  - 1886 C.
- Zittel, K. A. 1890 A, pp. 804, 857.

Subclass SAURURÆ Haeckel.

Cope, E. D. 1889 R, p. 869.
1898 B, p. 83.
Fürbringer, M. 1888 A, p. 1519.
Gadow, H. 1892 A, p. 236. (Archornithes.)
1898 A, p. 30. (Archæornithes.)
Haeckel, E. 1895 A, pp. 402, 409.
Huxley, T. H. 1867 A, p. 418.
1872 A, p. 233.
Menzbier, M. 1887 A.
Nicholson and Lydekker 1889 A, p. 1221.
Parker, W. K. 1875 A.
Pavlow, A. 1885 A, p. 118.
Stejneger, L. 1885 A, p. 21.
Woodward, A. S. 1898 B, p. 232. (Subclass Archæornithes; order Saururæ.)
Woodward, H. 1886 C, p. 370.
Zittel, K. A. 1890 A, p. 820.

Order ORNITHOPAPPI Stejneger.

Stejneger, L. 1885 A, p. 21.
Cope, E. D. 1889 R, p. 869.
Cope, E. D. 1898 B, p. 84.
Haeckel, E. 1895 A, p. 410. (Archæornithes.)

ARCHÆOPTERYGIDÆ.

Cope, E. D. 1898 B, p. 84.
Fürbringer, M. 1888 A, p. 1519.
Huxley, T. H. 1872 A, p. 233.
Nicholson and Lydekker 1889 A, p. 1221.

ARCHÆOPTERYX Meyer.

Meyer, H., 1861, Neues Jahrb. Mineral., p. 679.

Although no species of this genus has been found in North America, the following citations of the literature are given on account of the important information furnished by the genus.

Baur, G. 1884 B, p. 451.
1886 D.
Branco, W. 1885 A.
Dames, W. 1882 A.
1884 A.
1884 B.
1897 A, p. 818.
Edwards, A. M. 1863 A.
1869 A, p. 673.
Fraas, E. 1885 A.
Fürbringer, M. 1888 A, p. 1522.
Gadow, H. 1888 A, p. 166.
1891 A.
1892 A, p. 236.
Gaupp, E. 1894 A.
Haeckel, E. 1895 A, p. 412.
Hurst, C. H. 1893 A.
1895 A.
Huxley, T. H. 1868 A, p. 361.
Marsh, O. C. 1882 C.
Meyer, H., 1861, Palæontographica, i, p. 53.
Newton, A. 1875 A, p. 728.
Nicholson and Lydekker 1889 A, p. 1221.
Owen, R. 1864 C.
Parker, W. K. 1868 A, p. 142.
1875 A.
Pavlow, A. 1885 A.
Pycraft, W. P. 1894 A.
1896 A.
Selenka, E. 1869 A, pl. iii, figs. 4, 5.
Steinmann and Döderlein 1890 A, p. 668.
Stejneger, L. 1885 A, p. 21.
Vetter, B. 1885 A.
Vogt, C. 1880 A.
Wagner, A. 1861 A.
Wiedersheim, R. 1884 A, p. 659.
Woodward, A. S. 1898 B, p. 232, figs. 141, 142.
Woodward, H. 1874 B.
1884 A.
1885 C, p. 311.
1886 C, p. 359, figs. 5, 20.
Zittel, K. A. 1890 A, p. 820.

LAOPTERYX Marsh. Type *L. priscus* Marsh.

Marsh, O. C. 1881 C, p. 341.
Fürbringer, M. 1888 A, p. 1478.
Marsh, O. C. 1882 C.
Menzbier, M. 1887 A, p. 581.
Nicholson and Lydekker 1889 A, p. 1229.
Pavlow, A. 1885 A, p. 107.
Stejneger, L. 1885 A, p. 23.
Zittel, K. A. 1890 A, p. 824.

The true position of this genus is problematical.

Laopteryx priscus Marsh.

Marsh, O. C. 1881 C, p. 341.
Coues, E. 1884 A, p. 829.
Fürbringer, M. 1888 A.
Marsh, O. C. 1897 C, p. 508.
Stejneger, L. 1885 A, p. 23.

Jurassic; Wyoming.

Subclass EURHIPIDURA Gill.

Gill, T., 1874, Baird, Brewer, and Ridgway's Land Birds, i, Introd., p. xiii.
Cope, E. D. 1889 R, p. 869.
1891 N, p. 54.
Cope, E. D. 1898 B, p. 84.
Gadow, H. 1898 A, p. 30. (Neornithes.)
Haeckel, E. 1895 A, p. 402. (Ornithuræ.)
Stejneger, L. 1885 A, p. 31.
Woodward, A. S. 1898 B, p. 294.

Superorder ODONTOTORMÆ Marsh.

Marsh, O. C. 1875 E, p. 630.
Cope, E. D. 1889 R, p. 869.
1891 N, p. 55.
1898 B, p. 84.
Fürbringer, M. 1888 A, p. 1421.
1892 B.
Grinnell, G. B. 1881 A, p. 258.
Lydekker, R. 1891 A, p. 200.
1896 A, p. 649.
Marsh, O. C. 1873 C. (<Odontornithes.)
1875 D, p. 407. (Ichthyornithes.)
1876 F, p. 511.
1876 G, p. 59.
1877 E. (<Odontornithes.)
Marsh, O. C. 1880 G, p. 119.
1882 C. (<Odontornithes.)
1883 C, p. 86.
Menzbier, M. 1887 A.
Nicholson and Lydekker 1889 A, p. 1231.
Owen, R. 1873 A, p. 370. (<Odontornithes.)
Pavlow, A. 1885 A, p. 113.
Steinmann and Döderlein 1890 A, p. 673. (Odontormæ.)
Stejneger, L. 1885 A, p. 23.
Woodward, A. S. 1898 B, p. 242.
Woodward, H. 1886 C, p. 370. (<Odontornithes.)
Zittel, K. A. 1890 A, p. 834.

Order PTEROPAPPI Stejneger.

Stejneger, L. 1885 A, p. 23.
Cope, E. D. 1889 R, p. 870.
1891 N, p. 56.
Cope, E. D. 1898 B, p. 88.
Gadow, H. 1898 A, p. 31. (Ichthyornithes.)
Haeckel, E. 1895 A, p. 410. (Ichthyornithes.)

ICHTHYORNITHIDÆ.

Marsh, O. C. 1873 A.
Cope, E. D. 1898 B, p. 88.
Fürbringer, M, 1888 A, p. 1421.
1896 A, p. 497.
Lydekker, R. 1891 A, p. 201.
Marsh, O. C. 1873 C.
1875 E, p. 630.
Nicholson and Lydekker 1889 A, p. 1231.
Steinmann and Döderlein 1890 A, p. 673.

ICHTHYORNIS Marsh. Type *I. dispar* Marsh.

Marsh, O. C. 1872 Q.
Fürbringer, M. 1888 A.
1896 A, p. 499.
Grinnell, G. B. 1881 A, figs. 7, 9.
Huxley, T. H. 1876 B, xiii, p. 515
Lydekker, R. 1896 A, p. 649.
Marsh, O. C. 1872 P. (Colonosaurus, type *C. mudgei.*)
1873 C.
1875 E, p. 630.
1877 E.
1879 C.
1880 G.
1881 H.
1883 C.
Menzbier, M. 1887 A.
Nicholson and Lydekker 1889 A, pp. 1219, 1231.
Seeley, H. G. 1876 B.
Shufeldt, R. W. 1893 A.
Steinmann and Döderlein 1890 A, p. 673.
Stejneger, L. 1885 A, p. 26.
Thompson, D'A. W. 1890 B.
Woodward, A. S. 1898 B, p. 242.
Woodward, H. 1886 C, p. 361.
Zittel, K. A. 1890 A, p. 834.

Ichthyornis agilis Marsh.

Marsh, O. C. 1873 D, p. 230. (Graculavus.)
Coues, E. 1884 A, p. 827.
Marsh, O. C. 1880 G, p. 197.
Williston, S. W. 1898 B, p. 46.
Cretaceous (Niobrara); Kansas.

Ichthyornis anceps Marsh.

Marsh, O. C. 1872 E, p. 364. (Graculavus.)
Cope, E. D. 1874 C, p. 17. (Graculavus.)
1875 E, p. 245. (Graculavus.)
Coues, E. 1872 B, p. 350. (Graculavus.)
1884 A, p. 827.
Marsh, O. C. 1873 D, p. 229. (Graculavus.)
1880 G, p. 198.
Williston, S. W. 1898 B, p. 47.
Cretaceous (Niobrara); Kansas.

Ichthyornis dispar Marsh.

Marsh, O. C. 1872 Q.
Cope, E. D. 1874 C, p. 17.
1875 E, p. 246.
Coues, E. 1872 B, p. 350.
1884 A, p. 827.
Dana, J. D. 1896 A, p. 851, fig. 1431.
Marsh, O. C. 1872 P. (Colonosaurus mudgei.)
1873 C.
1873 D, p. 230.
1875 D, p. 403, pl. ix.
1875 E, p. 625, pl. ii.
1880 G, p. 197, pls. xxi–xxvi.
1883 C, p. 70, figs. 19, 21–24, 28, 29.
Nicholson and Lydekker 1889 A, p. 1231, fig. 1116.
Shufeldt, R. W. 1893 A.
Williston, S. W. 1897 H. p. 245.
1898 B, p. 46, pl. vii, figs. 1, 2.
Woodward, H. 1874 B.
Zittel, K. A. 1890 A, p. 835, figs. 712, 713.
Cretaceous (Niobrara); Kansas.

Ichthyornis lentus Marsh.

Marsh, O. C. 1877 D, p. 253. (Graculavus.)
Coues, E. 1884 A, p. 827.
Marsh, O. C. 1880 G, p. 198.
Cretaceous (Niobrara); Kansas.

Ichthyornis tener Marsh.

Marsh, O. C. 1880 G, p. 198, pl. xxx, fig. 8.
Coues, E. 1884 A, p. 828.
Williston, S. W. 1898 B, p. 47.
Cretaceous (Niobrara); Kansas.

Ichthyornis validus Marsh.

Marsh, O. C. 1880 G, p. 198, pl. xxx, figs. 11–14.
Coues, E. 1884 A, p. 828.
Cretaceous (Niobrara); Kansas.

Ichthyornis victor Marsh.

Marsh, O. C. 1876 F, p. 511.
Coues, E. 1884 A, p. 828.
Dana, J. D. 1896 A, p. 851, fig. 1430.
Grinnell, G. B. 1881 A, figs. 7, 9.
Marsh, O. C. 1880 G, p. 199, pls. xxvii–xxxiv.
1883 C. p. 74, figs. 25, 27, 30.
1897 C, p. 527, pl. xxvi, fig. 1.
Shufeldt, R. W. 1893 A.
Stejneger, L. 1885 A, p. 25, fig. 9. (No specific name.)
Williston, S. W. 1898 B, p. 47.
Woodward, A. S. 1898 B, p. 243, fig. 145.
Zittel, K. A. 1890 A, p. 834, fig. 711.
Cretaceous (Niobrara); Kansas.

APATORNITHIDÆ.

Fürbringer, M. 1888 A.
Fürbringer, M. 1896 A, p. 497.

APATORNIS Marsh. Type *Ichthyornis celer* Marsh.

Marsh, O. C. 1873 C.
Fürbringer, M. 1888 A.
1896 A, p. 497.
Grinnell, G. B. 1881 A.
Lydekker, R. 1896 A, p. 652.
Marsh, O. C. 1880 G, p. 141.
Nicholson and Lydekker 1889 A, p. 1231.
Zittel, K. A. 1890 A, p. 835.

Apatornis celer Marsh.

Marsh, O. C. 1873 A. (Ichthyornis.)
Cope, E. D. 1874 C, p. 17. (Ichthyornis.)
1875 E, p. 246. (Ichthyornis.)
Coues, E. 1884 A, p. 826.
Marsh, O. C. 1873 C.
1873 D, p. 230.
1875 D, p. 404.
1875 E, p. 626.
1880 G, p. 192, pls. xxviii–xxxiii.
Williston, S. W. 1898 B, p. 47.
Cretaceous (Niobrara); Kansas.

Superorder ODONTOLCÆ Marsh.

Marsh, O. C. 1875 D, p. 407.
Cope, E. D. 1889 R, p. 869.
1891 N, p. 54.
1898 B, p. 84.
Fürbringer, M. 1888 A.
1892 B. (Odontholcæ.)
Gadow, H. 1898 A, p. 31.
Grinnell, G. B. 1881 A, p. 258.
Haeckel, E. 1895 A, p. 416, (Hesperornithes.)
Lydekker, R. 1891 A, p. 202.
1896 A, p. 649.
Marsh, O. C. 1873 C. (<Odontornithes.)
1875 D, p. 407.
1875 E, p. 630.
Marsh, O. C. 1876 F. (<Odontornithes.)
1876 G, p. 59.
1877 B. (<Odontornithes.)
1878 C, p. 409. (<Odontornithes.)
1880 G, p. 5.
1883 C, p. 86.
Menzbier, M. 1887 A.
Nicholson and Lydekker 1889 A, p. 1224.
Pavlow, A. 1885 A, p. 113.
Steinmann and Döderlein 1890 A, p. 671.
Stejneger, L. 1885 A, p. 27. (Odontholcæ.)
Woodward, A. S. 1898 B, p. 234.
Wiedersheim, R. 1884 A, p. 664.
Zittel, K. A. 1890 A, p. 826.

Order DROMÆOPAPPI Stejneger.

Stejneger, L. 1885 A, p. 27.
Cope, E. D. 1889 R, 869.
Cope, E. D. 1898 B, p. 87.
Shufeldt, R. W. 1892 C. (Hesperornoidea.)

HESPERORNITHIDÆ.

Marsh, O. C. 1872 E, p. 363. (Hesperornidæ.)
Cope, E. D. 1889 R.
1898 B, p. 87.
Fürbringer, M, 1888 A.
1890 B.
1896 A, p. 499.
Lydekker, R. 1891 A, p. 204.
Marsh, O. C. 1876 F, p. 509.
Shufeldt, R. W. 1892 C, p. 202.
Steinmann and Döderlein 1890 A, p. 671.

HESPERORNIS Marsh. Type *H. regalis* Marsh.

Marsh, O. C. 1872 E, p. 360.
Cope, E. D. 1883 DD.
Dollo, L. 1883 A, p. 16.
Fürbringer, M. 1888 A, p. 1476.
Grinnell, G. B. 1881 A.
Helm, F. 1891 A.
Huxley, T. H. 1876 B, xiii, p. 515.
Lydekker, R. 1891 A, p. 204.
1891 C.
1893 E, p. 140.
1896 A, p. 649.
Marsh, O. C. 1875 D.
1876 F, p. 509. (Lestornis, type *L. crassipes.*)
1877 B.
1877 E.
1879 C.
1880 G, p. 5.
1881 H.
1882 C.
1883 C, p. 52.
1897 A.
Menzbier, M. 1887 A.
Nicholson and Lydekker 1889 A, p. 1224.
Osborn, H. F. 1900 G, p. 783.
Seeley, H. G. 1876 B, p. 510.
Shufeldt, R. W. 1888 A, p. 17.
1890 A, p. 169.
1890 C.
1893 A, p. 336.
1897 B.
Stejneger, L. 1885 A, p. 25.
Thompson, D'A. W. 1890 B.
Vetter, B. 1885 A.
Wiedershiem, R. 1884 A, p. 664.
Williston, S. W. 1896 A, pl. ii.
1898 B, p. 47, pls. v-viii.
Woodward, A. S. 1898 B, p. 235.
Woodward, H. 1885 C, p. 312.
1886 C, p. 361, pl. i.
Zittel, K. A. 1890 A, p. 827.

Hesperornis crassipes Marsh.

Marsh O. C. 1876 F, p. 509. (Lestornis.)
Coues, E. 1884 A, p. 827.
Marsh, O. C. 1880 G, p. 196, pls. vii, xxvii, text fig. 40.
Nicholson and Lydekker 1889 A, p. 1225.
Stejneger, L. 1885 A, p. 30. (Lestornis.)
Thompson, D'A. W. 1890 B, p. 9.
Williston, S. W. 1898 B, p. 45.
Cretaceous (Niobrara); Kansas.

Hesperornis gracilis Marsh.

Marsh, O. C. 1876 F, p. 510.
Coues, E. 1884 A, p. 82.
Marsh, O. C 1880 G, p. 197.
Williston, S. W. 1898 B, p. 46.
Cretaceous (Niobrara); Kansas.

Hesperornis regalis Marsh.

Marsh, O. C. 1872 A.
Cope, E. D. 1874 C, p. 17.
1875 E, p. 245.
Coues, E. 1872 B, p. 350.
1884 A, p 826.
Dana, J. D. 1896 A, p. 850, figs. 1423-1429.
Grinnell, G. B 1881 A, figs. 1, 3, 5, 6.
Huxley, T. H. 1876 C, p. 215.
Marsh, O. C. 1872 E, p. 360.
1873 D, p. 230.
1875 D, p. 404, pl. x.
1877 B, pl. v.
1880 G, p. 195, pls. i-vi; viii-xvi; xviii-xx; text figs. 1, 4-6, 8-14, 21-27, 35, 36.
1883 C, p. 52, figs. 3-5, 7, 9-14, 17, 18.
1897 C, p. 527, pl. xxvi, fig. 2.
Nicholson and Lydekker 1889 A, p. 1225, figs. 1111-1113.
Shufeldt, R. W. 1890 A, p. 169.
Stejneger, L. 1885 A, p. 27, figs. 13-16.
Thompson, D'A W 1890 B, figures.
Wiedersheim, R. 1884 A, p. 663.
Williston, S. W. 1898 B, p 45, pls. v, vi.
Woodward. A. S. 1898 B, p. 235, fig. 143.
Zittel, K. A. 1890 A, p. 816, figs. 704-707.
Cretaceous (Niobrara); Kansas.

Baptornis Marsh. Type *B. advenus* Marsh.

Marsh, O. C. 1877 B, p. 86.
Fürbringer, M. 1888 A.
Lydekker, R. 1891 C.
Zittel, K. A. 1890 A, p. 828.

Baptornis advenus Marsh.

Marsh, O. C. 1877 B, p. 86.
Coues, E. 1884 A p. 826.
Marsh, O. C. 1880 G, p. 192, figs. 37–39.
Williston, S. W. 1898 B, p. 46.
Zittel, K. A. 1890 A, p. 828.
Cretaceous (Niobrara); Kansas.

Coniornis Marsh. Type *C. altus* Marsh.

Marsh, O. C. 1893 A, p. 81.

Coniornis altus Marsh.

Marsh. O. C. 1893 A, p. 81, figs. 1–3.
Cretaceous; Montana.

Superorder DROMÆOGNATHÆ Huxley.

Huxley, T. H. 1867 A, p. 418.

This suborder, as here recognized, is equivalent to the *Ratitæ* of Merrem *plus* the *Crypturi* (tinamous). It is the *Dromæognathæ* of Stejneger and the *Ratitæ* of Cope, 1898. Unless otherwise indicated, the following authorities are to be understood as employing the term *Ratitæ*.

Cope, E. D. 1889 R, p. 870.
1891 N, p. 56.
1898 B, p. 84.
Cunningham, R. O. 1871 A.
Fürbringer, M. 1885 A.
1888 A.
Gadow, H. 1885 A.
1888 A.
1891 A.
1892 A, p. 237.
1898 A, p. 30.
Haeckel, E. 1895 A, p. 415.
Huxley, T. H. 1867 A, p. 418.
1872 A, p. 233.
Menzbier, M. 1887 A.
Mivart, St. G. 1874 A.
1877 A.
1892 A, p. 258.
Newton, A. 1868 A.
Nicholson and Lydekker 1889 A, p. 1222.
Parker, W. K. 1866 A. ("Ostrich tribe.")
1866 B. (Struthionidæ.)
1875 A.
1889 A.
1895 A.
Pavlow, A. 1885 A, p. 113.
Selenka, E. 1869 A.
Steinmann and Döderlein 1890 A, p. 671.
Stejneger, L. 1885 A, p. 31. (Dromæognathæ.)
Woodward, H. 1886 C, p. 370.
Zittel, K. A. 1890 A, p. 825.

Order GASTORNITHES.

Cope, E. D. 1889 R, p. 870.
1898 B, p. 85.
Nicholson and Lydekker 1889 A, p. 1228.
Stejneger, L. 1885 A, p. 54.

GASTORNITHIDÆ.

Dollo, L. 1883 F. p. 297. (Gastornis.)
Edwards, A. M. 1868 A, i, p. 165, pls. xxviii, xxix. (Gastornis.)
Fürbringer, M. 1888 A, p. 1178.
Hébert, E. 1855 A. (Gastornis.)
1855 B. (Gastornis.)
Lydekker, R. 1891 A, p. 357.
Newton, E. T. 1886 A, p. 143. (Gastornis.)
Nicholson and Lydekker 1889 A, p. 1228.
Owen, R. 1856 F, p. 204, pl. iii. (Gastornis.)
Woodward, A. S. 1898 B, p. 241 (Gastornis.)
Zittel, K. A. 1890 A, p. 836.

Diatryma Cope. Type *D. giganteum* Cope.

Cope, E. D. 1876 B.
1876 A.
1877 K, p. 69.
Nicholson and Lydekker 1889 A, p. 1229.
Zittel, K. A. 1890 A, p. 829.

Diatryma giganteum Cope.

Cope, E. D. 1876 B.
1877 K, p. 70, pl. xxxii, figs. 23–25.
Coues, E. 1884 A, p. 825. (Gastornis.)
Stejneger, L. 1885 A, p. 55.
Eocene; New Mexico.

Barornis Marsh. Type *B. regens* Marsh.

Marsh, O. C. 1894 J.

Barornis regens Marsh.

Marsh, O. C. 1894 J.
Eocene; New Jersey.

Superorder EUORNITHES Stejneger.

Stejneger, L. 1885 A, p. 64.

This group is equivalent to that usually called *Carinatæ*, with the tinamous and penguins removed. Unless otherwise indicated, the following authors employ the term *Carinatæ*.

Cope, E. D. 1889 R, p. 870.
 1891 N, p. 55. (Euornithes.)
 1898 B, pp. 85, 94. (Euornithes.)
Fürbringer, M. 1885 A.
 1888 A, p. 1141.
Gadow, H. 1888 A.
 1891 A.
 1892 A, p. 238.
 1898 A, p. 31.
Haeckel, E. 1895 A, p. 413.
Huxley, T. H. 1867 A, p. 418.
 1872 A, p. 234.
Lydekker, R. 1891 A, p. 1 (Carinatæ); p. 2 (Euornithes).
Menzbier, M. 1887 A.
Newton, A. 1868 A.
Nicholson and Lydekker 1889 A, p. 1229.
Parker, W. K. 1870 A.
 1875 A.
Pavlow, A. 1885 A, p. 113.
Selenka, E. 1869 A.
Shufeldt, R. W. 1885 A.
 1886 A.
 1886 B.
Steinmann and Döderlein 1890 A, p. 673.
Woodward, A. S. 1886 C, p. 370.
Zittel, K. A. 1890 A, p. 834.

Order CECOMORPHÆ Huxley.

Huxley, T. H. 1867 A.
Cope, E. D. 1889 R, p. 871.
 1898 B, p. 95.
Coues, E. 1884 A. p. 732 (Longipennes); p. 787 (Pygopodes).
Gadow, H. 1898 A, p. 31. (Colymbiformes.)
Huxley, T. H. 1872 A, p. 234.
Mivart, St. G. 1892 A, p. 276 (Pygopodiformes); p. 275 (Gaviæ); p. 276 (Tubinares).
Shufeldt, R. W. 1890 B. (Pygopodes.)
 1890 C. (Pygopodes.)
 1891 C. (Pygopodes.)
 1892 C. (Pygopodes.)
Stejneger, L. 1885 A, p. 64.
Zittel, K. A. 1890 A, p. 838 (Podicipitiformes); p. 843 (Tubinares); p. 844 (Charadriiformes, part).

Superfamily COLYMBOIDEA Stejneger.

Stejneger, L. 1885 A, p. 66. (Colymboideæ.)
Shufeldt, R. W. 1892 C. (Podicipoidea.)

COLYMBIDÆ.

Beddard, F. E. 1897 A, p. 468. (Colymbi.)
Coues E, 1866 A. (Colymbus, but not as here recognized.)
 1884 A, p. 789 (Colymbidæ); p. 792 (Podicipedidæ).
Edwards, A. M. 1868 A, p. 278. (Colymbides.)
Fürbringer, M. 1888 A, p. 1153. (Colymbidæ, Podicipidæ.)
 1890 B. (Colymbidæ, Podicipidæ.)
Fürbringer, M. 1896 A, p. 508. (Podicipidæ.)
Gadow, H. 1891 A.
Magnus, H. 1869 A.
Parker, W. K. 1868 A, p. 148. (Podicipinæ.)
Reichenow, A. 1871 A.
Selenka, E. 1869 A.
Shufeldt, R. W. 1890 A. (Podicipidæ.)
 1892 C. (Podicipidæ.)
Stejneger, L. 1885 A, p. 66.

COLYMBUS Linn. Type *C. cristatus* Linn.

Beddard, F. E. 1897 A, p. 468.
Brandt, J. F. 1840 A, p. 161.
Edwards, A. M. 1868 A, p. 278.
Gadow, H. 1891 A, pl. ix, figs. 4–6; pl. xiii, fig. 6. (Podiceps.)
Giebel, C. G. 1866 A, p. 29. (On Podiceps.)
Lydekker, R. 1891 C.
Magnus, H. 1869 A. (On Podiceps.)
Owen, R. 1856 F, p. 212.
Shufeldt, R. W. 1890 A.
 1892 C.
 1894 B.

Colymbus auritus Linn.

Brandt, J. F. 1840 A, p. 204, pl. xiv. (Podiceps.)
Shufeldt, R. W. 1891 B, p. 818.
 1892 D. p. 396.
 1897 A, p. 646.

Recent; Northern Hemisphere: Pleistocene: Oregon, Tennessee.

Colymbus holbœlii (Reinh.).

Shufeldt, R. W. 1891 B, p. 818.
 1892 D, p. 396.

Recent; North America: Pleistocene (Equus beds); Oregon.

Colymbus nigricollis (Brehm.).

Cope, E. D. 1878 H, p. 389. (Podiceps "near californicus.")
 1889 F. (Podiceps californicus).
 1889 S, p. 980. (Podiceps californicus.)
Shufeldt, R. W. 1890 A, p. 170, text figs. 1, 2.
 1891 B, p. 818. (C. n. californicus.)
 1892 D, p. 396. (C. n. californicus.)

Recent; Western North America: Pleistocene (Equus beds); Oregon.

ÆCHMOPHORUS Coues. Type *Podiceps occidentalis* Lawr.

Coues, E. 1862, Proc. Acad. Nat. Sci. Phila., p. 229.
1884 A, p. 793.

Æchmophorus occidentalis (Lawr.).

Cope, E. D. 1878 H, p. 389. (Podiceps.)
1889 F. (Podiceps.)
Cope, E. D. 1889 S, pp. 978, 980. (Podiceps.)
Coues, E. 1884 A, p. 793.
Shufeldt, R. W. 1891 B, p. 818.
1892 D, p. 396.
Recent; Western North America: Pleistocene; Oregon.

PODILYMBUS Lesson. Type *Colymbus podiceps* Linn.

Lesson, 1831, Traité d'Orn., p. 595.
Coues, E. 1884 A, p. 796.
Shufeldt, R. W. 1890, A, p. 173.

Podilymbus podiceps (Linn.).

Cope, E. D. 1878 H, p. 389.
1889 F
Cope, E. D. 1889 S, p. 980.
Coues, E. 1884 A, p. 797. (P. podiceps.)
Shufeldt, R. W. 1891 B, p. 818.
1892 D, p. 396.
Recent; North America: Pleistocene; Oregon.

Superfamily ALCOIDEA Stejneger.

Stejneger, L. 1885 A, p. 68. (Alcoideæ.)

ALCIDÆ.

Blyth, E. 1837 A.
Coues, E. 1884 A, p. 797.
Edwards, A. M. 1868 A, p. 278.
Fürbringer, M. 1888 A, p. 1148.
Gadow, H. 1891 A.
Huxley, T. H. 1867 A, p. 458.
Owen, R. 1856 F, p. 212. (Alca.)
Parker, W. K. 1868 A, p. 146. (Alcinæ.)
Reichenow, A. 1871 A.
Selenka, E. 1869 A.
Shufeldt, R. W. 1888 A.
1889 B.
1889 C.
1890 A.
1891 C.

PLAUTUS Brünnich. Type *Alca impennis* Linn.

Brünnich, 1772, Zool. Fundamenta, p. 78.

The genus *Plautus* is included by many authors in *Alca;* hence references are given to the literature of the last-named genus.

Coues, E. 1884 A, p. 819. (Alca.)
Giebel, C. G. 1866 A, p. 29. (Alca.)
Lucas, F. A. 1888 A.
Menzbier, M. 1887 A.
Newton, A. 1875 A, p. 733. (Alca.)
Owen, R. 1856 F, p. 212. (Alca.)
Shufeldt, R. W. 1888 A. (Alca, Plautus.)
1889 B. (Alca.)
1889 C. (Alca.)

Plautus impennis (Linn.).

American Naturalist 1869 A. (Alca.)
Blasius, W. 1884 A. (Alca.)
Blyth, E. 1837 A. (Alca.)
Champley, R. 1864 A. (Alca.)
Coues, E. 1869 A. (Alca.)
Coues, E. 1884 A, p. 819, fig. 561. (Alca.)
Lucas, F. A. 1888 A.
1890 C, p. 493, pls. lxxii, lxxiii. ("Great auk.")
Menzbier, M. 1887 A.
Newton, A. 1861 A. (Alca.)
1870 A. (Alca.)
1875 A, p. 731. (Alca.)
1879 A. (Alca.)
Orton, J. 1869 A. (Alca.)
Owen, R. 1864 A. (Alca.)
1866 C, pls. i–iii. (Alca.)
Preyer, W. 1862 A.
Selenka, E. 1869 A, pl. ix, figs. 1, 2. (Alca.)
Shufeldt, R. W. 1888 A, pl. v, figs. 24, 25.
Steenstrup, J. 1855 A, plate.
Stejneger, L. 1885 A, p. 72, fig. 82.
Wyman, J. 1867 A.
Recently extinct; once an inhabitant of Newfoundland, Iceland, Denmark, etc.

URIA Brisson. Type *Colymbus troile* Linn.

Coues, E. 1884 A, p. 814 (Uria); p. 816 (Lomvia).
Selenka, E. 1869 A, pl. ix, fig. 7; pl. lvii, fig. 10.
Shufeldt, R. W. 1889 B, p. 165, pl. vii; p. 537, text figs 1, 2, 4, 5, 6, 8.
1889 C.

Uria affinis (Marsh).

Marsh, O. C. 1872 J, p. 259. (Catarractes.)
Coues, E. 1872 B, p. 350. (Catarractes.)
1884 A, p. 825. (Lomvia.)
Marsh, O. C. 1870 A, p. 214. (No name.)
Pleistocene; New Jersey.

Uria antiqua (Marsh).

Marsh, O. C. 1870 A, p. 213. (Catarractes.)
Cope, E. D. 1869 M (1870), p. 237. (Catarhactes.)
1875 V, p. 41. (Catarhactes.)
Coues, E. 1872 B, p. 350. (Catarractes.)
1884 A, p. 825. (Lomvia.)
Miocene; North Carolina.

Superfamily LAROIDEA Stejneger.

Stejneger, L. 1885 A, p. 74. (Laroideæ.)

LARIDÆ.

Brandt, J. F. 1840 A, p. 165.
Coues, E. 1884 A, p. 733.
Edwards, A. M. 1868 A, p. 302.
Fürbringer, M. 1888 A, p. 1158.
Gadow, H. 1891 A.
1893 A, p. 35. (Lari.)
Parker, W. K. 1868 A, p. 153. (Larinæ.)
Reichenow, A. 1871 A.
Selenka, E. 1869 A.
Shufeldt, R. W. 1890 A.
1890 B.
1891 C.
Stejneger, L. 1885 A, p. 77.
Zittel, K. A, 1890 A, p. 845.

LARUS Linnæus. Type *Larus canus* Linn.

Coues, E. 1884 A, p. 740.
Edwards, A. M. 1868 A, p. 305.
Huxley, T. H. 1867 A, p. 430, fig. 11.
Owen, R. 1856 F, p. 212.
Selenka, E. 1869 A, pl. xv, fig. 12; pl. xvii, figs. 12, 16.
Shufeldt, R. W. 1888 A, pl. ii, figs. 2-12; pl. iv, fig. 21.
1889 B, pl. vii, fig. 6; pl. ix, fig. 12; pl. x, fig. 18; pl. xi, fig. 26.
1890 A, p. 545, figures.
1890 B, p. 66, with figures.
1891 C.

Larus argentatus Brünn.

Coues, E. 1884 A, p. 743.
Shufeldt, R. W. 1891 B, p. 818. (L. a. smithsonianus.)
1892 D, p. 397. (L. a. smithsonianus.)
Recent; North America: Pleistocene; Oregon.

Larus californicus? Lawr.

Coues, E. 1884 A, p. 745.
Shufeldt, R. W. 1891 B, p. 818.
1892 D, p. 398.
Recent; Western North America: Pleistocene; Oregon.

Larus oregonus Shufeldt.

Shufeldt, R. W. 1892 D, p. 398, pl. xv, fig. 3.
1891 B, p. 818. (No description.)
Pleistocene; Oregon.

Larus philadelphia (Ord).

Coues, E. 1884 A, p. 751. (Chroicocephalus.)
Shufeldt, R. W. 1891 B, p. 818.
1892 D, p. 399.
Recent; North America: Pleistocene; Oregon

Larus robustus Shufeldt.

Shufeldt, R. W. 1891 B, p. 818.
1892 D, p. 398, pl. xv, figs. 1, 2.
Pleistocene; Oregon.

XEMA Leach. Type *Larus sabinii* (Sab.).

Coues, E. 1884 A, p. 753.
Shufeldt, R. W. 1893 A.

Xema sabinii (Sab.).

Coues, E. 1885 A, p. 753.
Shufeldt, R. W. 1891 B, p. 818.
1892 D, p. 399.
1893 A.
Recent; Arctic America and Europe: Pleistocene; Oregon.

HYDROCHELIDON Boie. Type *Sterna nigra* Linn.

Coues, E. 1884 A, p. 770.

Hydrochelidon nigra (Linn.).

Coues, E. 1884 A, p. 770. (H. lariformis.)
Shufeldt, R. W. 1891 B, p. 818. (H. n. surinamensis.)
1892 D, p. 399. (H. n. surinamensis.)
Recent; Old and New Worlds: Pleistocene; Oregon.

STERNA Linn. Type *Sterna caspia* Pall.

Brandt, J. F. 1840 A, p. 218.
Coues, E. 1884 A, p. 756.
Selenka, E. 1869 A, pl. viii, fig. 13.
Shufeldt, R. W. 1893 A.

Sterna elegans? Gamb.

Coues, E. 1884 A, p. 760.
Shufeldt, R. W. 1891 B, p. 818.
1892 D, p. 399.
Recent; New England to California and Brazil: Pleistocene; Oregon.

Sterna forsteri? Nutt.

Coues, E. 1884 A, p. 763.
Shufeldt, R. W. 1891 B, p. 818. (S. fosteri.)
1892 D, p. 399. (S. fosteri.)
Recent; North America: Pleistocene; Oregon.

Superfamily PROCELLAROIDEA Stejneger.

Stejneger, L. 1885 A, p. 84. (Procellaroideæ.)
Beddard, F. E. 1897 A, p. 468.
Coues, E. 1884 A, p. 773. (Tubinares.)
Fürbringer, M. 1888 A, p. 1162. (Tubinares.)
Gadow, H. 1898 A, p. 32. (Procellariæ.)
Mivart, St. G. 1892 A, p. 276. (Tubinares.)
Nicholson and Lydekker 1889 A, p. 1232. (Tubinares.)
Pycraft, W. P. 1899 A, p. 381. (Tubinares.)
Shufeldt, R. W. 1888 E. (Tubinares.)
Zittel, K. A. 1890 A, p. 843. (Tubinares.)

PROCELLARIIDÆ.

Coues, E. 1884 A, p. 778.
Fürbringer, M. 1888 A, p. 1162.
Pycraft, W. P. 1899 A, p. 402.
Stejneger, L. 1885 A, p. 88.

PUFFINUS Brisson. Type *Procellaria puffinus* Brünn.

Coues, E. 1884 A, p. 783.
Pycraft, W. P. 1899 A, p. 382.
Selenka, E. 1869 A, pl. xvii, fig. 15.

Puffinus conradi Marsh.

Marsh, O. C. 1870 A, p. 212.
Cope, E. D. 1869 M (1870), p. 237.
Coues, E. 1872 B, p. 350.
    1884 A, p. 825.
Marsh, O. C. 1870 G.
    Miocene; Maryland.

Order GRALLÆ.

Beddard, F. E. 1897 A, p. 469.
Cope, E. D. 1898 B, p. 89.
Coues, E. 1884 A, p. 596 (Limicolæ); p. 665 (Alectorides).
Fürbringer, M. 1888 A, p. 1235 (Fulicariæ); p. 1420 (Limicolæ).
Gadow, H. 1898 A, p. 35. (Charadriiformes.)
Haeckel, E. 1895 A, p. 414. (Charadriornithes.)
Huxley, T. H. 1867 A, p. 457. (Charadriomorphæ, Geranomorphæ.)
    1872 A, p. 234. (Charadriomorphæ, Geranomorphæ.)
Mivart, St. G. 1892 A, p. 273 (Alectorides); p. 275 (Limicolæ).
Owen, R. 1856 F, p. 208.
Parker, W. K. 1868 A, p. 163.
Selenka, E. 1869 A. (Limicolæ, etc.)
Shufeldt, R. W. 1883 A. (> Limicolæ.)
    1884 A. (> Limicolæ.)
    1894 A.
Stejneger, L. 1885 A, p. 91.

Superfamily SCOLOPACOIDEA Stejneger.

Stejneger, L. 1885 A, p. 94. (Scolopacoideæ.)
Gadow, H. 1898 A, p. 35. (Limicolæ.)
Huxley, T. H. 1867 A, p. 457. (Charadriomorphæ.)

CHARADRIIDÆ.

Coues, E. 1885 A, p. 597.
Edwards, A. M. 1868 A, p. 367. (Totanides, in part.)
Fürbringer, M. 1888 A.
Selenka, E. 1869 A.
Stejneger, L. 1885 A, p. 98.
Zittel, K. A. 1890 A, p. 844.

CHARADRIUS Linn. Type *Tringa squatarola* Linn.

Cope, E. D. 1884 O, p. 754.
Coues, E. 1884 A, p. 599.
Edwards, A. M. 1868 A, p. 375.
Huxley, T. H. 1867 A, p. 427, figs. 6-8.
Shufeldt, R. W. 1888 A, pl. ii, fig. 10.
    1890 A, pl. xii, figs. 5, 6.
    1891 C.

Charadrius sheppardianus Cope.

Cope, E. D. 1881 B.
    1884 A, p. 823.
    1884 O, p. 755, pl. lix, fig. 5.
Coues, E. 1884 A, p. 823.
Zittel, K. A. 1890 A, p. 844.
    Eocene; Colorado.

SCOLOPACIDÆ.

Coues, E. 1884 A, p. 612 (Phalaropodidæ); p. 614 (Scolopacidæ).
Edwards, A. M. 1868 A, p. 367. (Totanides, part.)
Fürbringer, M. 1888 A.
Gadow, H. 1891 A.
Parker, W. K. 1868 A, p. 155. (Scolopacinæ.)
Reichenow, A. 1871 A. (Scolopacidæ, Phalaropidæ.)
Shufeldt, R. W. 1884 A. (Numenius.)
Stejneger, L. 1885 A, p. 105.
Zittel, K. A. 1890 A, p. 844.

Palæotringa Marsh. Type *P. littoralis* Marsh.

Marsh, O. C. 1870 A, p. 208.
1870 G.
Zittel, K. A. 1890 A, p. 844.
Marsh, O. C. 1873 D, p. 229.
1880 G, p. 200.
Cretaceous; New Jersey.

Palæotringa littoralis Marsh.

Marsh, O. C. 1870 A, p. 208.
Cope, E. D. 1869 M (1870), p. 238.
1875 E, p. 246.
Coues, E. 1872 B, p. 349.
1884 A, p. 828. (P. litoralis.)
Marsh, O. C. 1870 G.
1873 D, p. 229.
1880 G, p. 199.
Cretaceous; New Jersey.

Palæotringa vagans Marsh.

Marsh, O. C. 1872 E, p. 365.
Coues, E. 1872 B, p. 349.
1884 A, p. 828.

Palæotringa vetus Marsh.

Marsh, O. C. 1870 A, p. 209.
Cope, E. D. 1869 M (1870), p. 238.
1875 E, p. 246.
Coues, E. 1872 B, p. 349.
1884 A, p. 828.
Harlan, R. 1835 B, p. 280. ("Scolopax.")
Leidy, J. 1851 H, p. 330. ("Scolopax.")
1865 A, p. 2. ("Scolopax.")
1866 B, p. 237. ("Scolopax.")
Marsh, O. C. 1870 G.
1873 E, p. 229.
1880 G, p. 200.
Morton, S. G. 1834 A, p. 32. (No name.)
Cretaceous; New Jersey.

Phalaropus Brisson. Type *Tringa lobata* Linn.

Coues, E. 1884 A, p. 612 (Steganopus); p. 614 (Lobipes).
Edwards, A. M. 1868 A, p. 375.

Phalaropus lobatus (Linn.)

Coues, E. 1884 A, p. 613. (Lobipes hyperboreus.)
Shufeldt, R. W. 1891 B, p. 820.
1892 D, p. 418.
Recent; Northern Hemisphere: Pleistocene; Oregon.

Superfamily GRUIOIDEA Stejneger.

Stejneger L. 1885 A, p. 121. (Gruioideæ.)
Beddard, F. E. 1897 A, p. 469. (Grues.)
Gadow, H. 1898 A, p. 34. (Gruiformes.)
Huxley, T. H. 1867 A, p. 457. (Geranomorphæ.)
Selenka, E. 1869 A.
Shufeldt, R. W. 1894 A. (Gruioidea.)

GRUIDÆ.

Coues, E. 1884 A, p. 666.
Edwards, A. M. 1871 A, p. 1. (Gruides.)
Fürbringer, M. 1888 A, p. 1208.
Gadow, H. 1891 A.
Owen, R. 1856 F, p. 213.
Parker, W. K. 1868 A, p. 158. (Gruinæ.)
Selenka, E. 1869 A.
Shufeldt, R. W. 1894 A.
Stejneger, L. 1885 A, p. 123.
Zittel, K. A. 1890 A, p. 846.

Grus Pallas. Type *Ardea grus* Linn.

Coues, E. 1884 A, p. 666.
Edwards, A. M. 1871 A, p. 1.
Huxley, T. H. 1867 A, p. 426, fig. 9.
Owen, R. 1856 F, p. 209.
Parker, W. K. 1868 A, p. 158.
Selenka, E. 1869 A, pl. x, fig. 8, pl. xi, fig. 14.
Shufeldt, R. W. 1894 A.

Grus haydeni Marsh.

Marsh, O. C. 1870 A, p. 214.
Cope, E. D. 1869 M (1870), p. 237.
Coues, E. 1872 B, p. 348.
1884 A, p. 823.
King, C. 1878 A, p. 430.
Marsh, O. C. 1870 G.
Pliocene (?); Nebraska.

Grus proavus Marsh.

Marsh, O. C. 1872 J, p. 261.
Coues, E. 1872 B, p. 348.
1884 A, p. 823.
Pleistocene; New Jersey.

Aletornis Marsh. Type *A. nobilis* Marsh.

Marsh, O. C. 1872 J, p. 256.
Fürbringer, M. 1888 A.
Zittel, K. A. 1890 A, p. 846.
King, C. 1878 A, p. 404.
Eocene (Bridger); Wyoming.

Aletornis bellus Marsh.

Marsh, O. C. 1872 J, p. 258.
Coues, E. 1872 B, p. 349.
1884 A, p. 824.

Aletornis gracilis Marsh.

Marsh O. C. 1872 J, p. 258.
Coues, E. 1872 B. p. 348.
1884 A, p. 824.
King, C. 1878 A, p. 404.
Eocene (Bridger); Wyoming.

Aletornis nobilis Marsh.

Marsh, O. C. 1872 J, p. 256.
Coues, E. 1872 B, p. 348.
1884 A, p. 823.
King, C. 1878 A, p. 404.
Eocene (Bridger); Wyoming.

Aletornis pernix Marsh.

Marsh, O. C. 1872 J, p. 256.
Coues, E. 1872 B, p. 348.
1884 A, p. 824.
King, C. 1878 A, p. 404.
Eocene (Bridger); Wyoming.

Aletornis venustus Marsh.

Marsh, O. C. 1872 J, p. 257.
Coues, E. 1872 B, p. 348.
1884 A, p. 824.
King, C. 1878 A, p. 404.
Eocene (Bridger); Wyoming.

RALLIDÆ.

Coues, E. 1884 A, p. 669.
Edwards, A. M. 1871 A, p. 110.
Fürbringer, M. 1888 A, p. 1235.
Gadow, H. 1891 A.
Parker, W. K. 1868 A, p. 161. (Rallinæ.)
Selenka E. 1869 A.
Shufeldt, R. W. 1888 B. (On Porzana.)
1894 A.
Stejneger, L. 1885 A, p. 127.
Zittel, K. A. 1890 A, p. 846.

CRECCOIDES Shufeldt. Type *C. osbornii* Shufeldt.

Shufeldt, R. W. 1892 B, p. 253.
1892 D, p. 411, footnote. (Crecoides.)
1892, in Cope, E. D. 1892 J, p. 125.

Creccoides osbornii Shufeldt.

Shufeldt, R. W. 1892 B, p. 253.
Shufeldt, R. W. 1892, in Cope E. D. 1892 J, p. 125.
Pleistocene; Texas.

TELMATORNIS Marsh. Type *T. priscus* Marsh.

Marsh, O. C. 1870 A, p. 210.
Fürbringer. M. 1888 A, p. 1235.
Marsh, O. C. 1870 G.
Zittel, K. A. 1890 A, p. 846.

Telmatornis affinis Marsh.

Marsh, O. C. 1870 A, p. 211.
Cope, E. D. 1869 M (1870), p. 238.
1875 E, p. 246.
Coues, E. 1872 B, p. 349.
1884 A, p. 829.
Marsh, O. C. 1870 G.
1873 D, p. 229.
Marsh, O. C. 1880 G, p. 201.
Cretaceous; New Jersey.

Telmatornis priscus Marsh.

Marsh, O. C. 1870 A, p. 210.
Cope, E. D. 1869 M (1870), p. 238.
1875 E, p. 246.
Coues, E. 1872 B, p. 349.
1884 A, p. 829.
Marsh, O. C. 1870 G.
1873 D, p. 229.
1880 G, p. 200.
Cretaceous; New Jersey.

FULICA Linn. Type *F. atra* Linn.

Coues, E. 1884 A, p. 676.
Fürbringer, M. 1888 A, p. 1235.
Zittel, K. A. 1890 A, p. 846.
Shufeldt, R. W. 1891 B, p. 819.
1892 D, p. 411.
Recent; North America: Pleistocene; Oregon.

Fulica americana Gmel.

Cope, E. D. 1889 F.
1889 S, p. 980.
Coues, E. 1884 A, p. 676.

Fulica minor Shufeldt.

Shufeldt, R. W. 1892 D, p. 412, pl. xvii, fig. 32.
1891 B, p. 820. (No description).
Pleistocene; Oregon.

Order CHENOMORPHÆ Huxley.

Huxley, T. H. 1867 A, p. 460.
Cope, E. D. 1898 B, p. 88.
Coues, E. 1884 A, p. 677. (Lamellirostres.)
Edwards, A. M. 1868 A, I, p. 127. (Lamellirostres.)
Fürbringer, M. 1888 A, p. 1173 (Anseres); p. 1184 (Phœnicopteridæ).
Gadow, H. 1891 A. (Lamellirostres.)
1898 A, p. 33. (Anseriformes.)
Huxley, T. H. 1872 A, p. 234. (Chenomorphæ.)
Mivart, St. G. 1892 A, p. 277. (Lamellirostres.)
Owen, R. 1856 F, p. 211. (Natatores.)
Selenka, E. 1869 A. (Lamellirostres.)
Shufeldt, R. W. 1889 A. (Anseres.)
Stejneger, L. 1885 A, p. 132.
Zittel, K. A. 1890 A, p. 836 (Anseriformes); p. 839 (Ciconiiformes).

Superfamily ANATOIDEA Stejneger.

Stejneger, L. 1885 A, p. 136. (Anatoideæ.)
Gadow, H. 1898 A, p. 33. (Anseres.)
Giebel, C. G. 1866 A, p. 28. (Anseres.)
Magnus, H. 1869 A. (Natatores.)
Reichenow, A. 1871 A. (Anseres.)
Shufeldt, R. W. 1889 A. (Anseres.)

ANATIDÆ.

Beddard, F. E. 1897 A, p. 466.
Coues, E. 1884 A, p. 679.
Gadow, H. 1891 A.
Owen, R. 1856 F, p. 213.
Parker, W. K. 1868 A, p. 152. (Anatinæ.)
Selenka, E. 1869 A.
Shufeldt, R. W. 1889 A.

LOPHODYTES Reichenbach. Type *Mergus cucullatus* Linn.

Coues, E. 1884 A, p. 716.

Lophodytes cucullatus (Linn.).

Coues, E. 1884 A, p. 718. (Mergus.)
Shufeldt, R. W. 1891 B, p. 818.
1892 D, p. 402.
Recent; North America: Pleistocene; Oregon.

ANAS Linn. Type *A. boschas* Linn.

Coues, E. 1884 A, p. 691.
Gadow, H. 1891 A, pl. iv, fig. 2.
Giebel, C. G. 1866 A, p. 28.
Selenka, E. 1869 A.
Shufeldt, R. W. 1889 A.
Zittel, K. A. 1890 A, p. 637.

Anas americana Gmel.

Coues, E. 1884 A, p. 694. (Mareca.)
Shufeldt, R. W. 1891 B, p. 818.
1892 D, p. 403.
Recent; North America: Pleistocene; Oregon.

Anas boschas Linn.

Coues, E. 1884 A, p. 691. (A. boscas.)
Selenka, E. 1869 A, pl. ii, fig. 9.
Shufeldt, R. W. 1889 A, p. 233.
1891 B, p. 818.
1892 D, p. 403.
Recent; Northern Hemisphere: Pleistocene; Oregon.

Anas carolinensis Gmel.

Coues, E. 1884 A, p. 695. (Querquedula.)
Shufeldt, R. W. 1891 B, p. 818.
1892 D, p. 403.
Recent; North America: Pleistocene; Oregon.

Anas cyanoptera ? Vieill.

Coues, E. 1884 A, p. 696. (Querquedula.)
Shufeldt, R. W. 1891 D, p. 818.
1892 D, p. 404.
Recent; South America, Western North America: Pleistocene; Oregon.

Anas discors Linn.

Coues, E. 1884 A, p. 696. (Querquedula.)
Shufeldt, R. W. 1889 A.
1891 B, p. 818.
1892 D, p. 403.
Recent; North America: Pleistocene; Oregon.

SPATULA Boie. Type *Anas clypeata* Linn.

Coues, E. 1884 A, p. 696.
Shufeldt, R. W. 1889 A, p. 230.
Zittel, K. A. 1890 A, p. 838.

Spatula clypeata (Linn.).

Coues, E. 1884 A, p. 696.
Selenka, E. 1869 A, pl. x, fig. 5. (Anas.)
Shufeldt, R. W. 1889 A, p. 230, figs. 15, 16, 20, 22–25.
1891 B, p. 819.
1892 D, p. 404.
Recent; North America, Europe, Asia: Pleistocene; Oregon.

DAFILA Stephens.

Coues, E. 1884 A, p. 692.

Dafila acuta (Linn.).

Coues, E. 1884 A, p. 692.
Shufeldt, R. W. 1891 B, p. 819.
1892 D, p. 404.
Recent; Northern Hemisphere: Pleistocene; Oregon.

AIX Boie. Type *Anas sponsa* Linn.

Coues, E. 1884 A, p. 697.

Aix sponsa (Linn.).

Coues, E. 1884 A, p. 698.
Shufeldt, R. W. 1891 B, p. 819.
1892 D, p. 405.
Recent; North America: Pleistocene; Oregon.

ATHYA Boie. Type *Anas ferina* Linn.

Coues, E. 1884 A, p. 701. (Fuligula.)

Athya marila.

Coues, E. 1884 A, p. 701. (Fuligula.)
Shufeldt, R. W. 1891 B, p. 819.
1892 D, p. 405.
Recent; North America: Pleistocene; Oregon.

GLAUCIONETTA Stejneger. Type *Anas clangula* Linn.

Coues, E. 1884 A, p. 704. (<Clangula.)
Shufeldt, R. W. 1889 A, p. 235.

Glaucionetta islandica (Gmel.).

Coues, E. 1884 A, p. 704. (Clangula.)
Shufeldt, R. W. 1889 A, p. 235, figs. 19, 21, 26.
1891 B, p. 819.
1892 D, p. 405.
Recent; North America and Northern Europe: Pleistocene; Oregon.

CLANGULA Leach. Type *Anas glacialis* Linn.

Coues, E. 1884 A, p. 704 (Clangula); p. 706 (Harelda).

Clangula hyemalis (Linn.).

Coues, E. 1884 A, p. 706. (Harelda glacialis.)
Shufeldt, R. W. 1891 B, p. 819.
1892 D, p. 406.
Recent; Northern Hemisphere: Pleistocene; Oregon.

CHEN Boie.

Coues, E. 1884 A, p. 685.

Chen hyperborea (Pall.).

Coues, E. 1884 A, p. 685. (C. hyperboreus.)
Shufeldt, R. W. 1891 B, p. 819.
1892 D, p. 409.
Recent; North America: Pleistocene; Oregon.

ANSER Brisson. Type *Anas anser* Linn.

Coues, E. 1884 A, p. 684.
Owen, R. 1856 F, p. 211.
Selenka, E. 1869 A, pl. xvii, fig. 10.
Shufeldt, R. W. 1889 A.

Anser albifrons (Gmel.).

Cope, E. D. 1878 H, p. 389.
1889 F.
1889 S, p. 980.
Coues, E. 1884 A, p. 684.
Shufeldt, R. W. 1891 B, p. 819.
1892 D p. 408.
Recent, Northern regions: Pleistocene; Oregon.

Anser condoni Shufeldt.

Shufeldt, R. W. 1892 D, p. 406, pl. xvi, figs. 19, 26, 27,
1891 A, p. 819. (Name only.)
Pleistocene; Oregon.

BRANTA Scopoli. Type *Anas bernicla* Linn.

Coues, E. 1884 A, p. 686. (Bernicla.)
Shufeldt, R. W. 1889 A.

Branta canadensis (Linn.).

Cope, E. D. 1878 H, p. 389. (Anser.)
1889 F. (Anser.)
1889 S, pp. 978, 980. (Anser.)
Coues, E. 1884 A, p. 688. (Bernicla.)
Shufeldt, R. W. 1889 A, p. 248, figs. 27–30.
1891 B, p. 819.
1892 D, p. 408.
Recent; North America: Pleistocene; Oregon.

Branta hypsibata (Cope).

Cope, E. D. 1878 H, p. 387. (Anser.)
1889 F.
Cope, E. D. 1889 S, p. 980.
Coues, E. 1884 A, p. 824. (Bernicla hypsibates.)
Shufeldt, R. W. 1891 B, p. 819.
1892 D, p. 407.
Zittel, K. A. 1890 A, p. 838.
Pleistocene; Oregon.

Branta propinqua Shufeldt.

Shufeldt, R. W. 1892 D, p. 407, pl. xv. fig. 17.
Cope, E. D. 1878 H, p. 389. (Anser, "near nigricans.")
1889 F. (Anser, "near nigricans.")
1889 S, p. 890. Anser, "near nigricans.")
Shufeldt, R. W. 1891 B, p. 819.
Pleistocene; Oregon.

OLOR Wagler. Type *Anas cygnus* Linn.

Coues, E. 1884 A, p. 682. (Cygnus.)
Selenka, E, 1869 A, pl. x, figs. 2, 3. (Cygnus.)
Shufeldt, R. W. 1889 A, p. 233.

Olor paloregonus Cope.

Cope, E. D. 1878 H, p. 388. (Cygnus.)
Cope, E. D. 1889 F. (Cygnus.)
1889 S, pp. 978, 980. (Cygnus.)
Coues, E. 1884 A, p. 824. (Cygnus.)
Shufeldt, R. W. 1891 B, p. 819.
1892 D, p. 409, pl. xvi, figs. 18, 21, 25.
Pleistocene; Oregon.

LAORNIS Marsh. Type *L. edvardsianus* Marsh.

Marsh, O. C. 1870 A, p. 206.
Fürbringer, M. 1888 A, pp. 1141, 1159, 1174.
Marsh, O. C. 1870 G.
Stejneger, L. 1885 A, p. 30.
Zittel, K. A. 1890 A, p. 837.

Laornis edvardsianus Marsh.

Marsh, O. C. 1870 A, p. 206.
Cope, E. D. 1869 M (1870), p. 237.
Cope, E. D. 1875 E, p. 245.
Coues, E. 1872 B, p. 350.
1884 A, p. 828.
Marsh, O. C. 1870 G.
1873 D, p. 230.
1880 G, p. 199.
Cretaceous; New Jersey.

Superfamily PHŒNICOPTEROIDEA Stejneger.

Stejneger, L. 1885 A, p. 153. (Phœnicopteroideæ.)
Gadow, H. 1898 A, p. 33. (Phœnicopteri.)
Huxley, T. H. 1867 A, p. 460. (Amphimorphæ.)
1872 A, p. 234. (Amphimorphæ.)

PHŒNICOPTERIDÆ.

Coues, E. 1884 A, p. 678.
Edwards, A. M. 1871 A, p. 53. (Phœnicopterides.)
Fürbringer, M. 1888 A, p. 1184.
Gadow, H. 1891 A.
Parker, W. K. 1868 A, p. 166. (Phœnicopterinæ.)
Reichenow, A. 1871 A.
Seebohm, H. 1889 A. (Phœnicopteri.)
Selenka, E. 1869 A.
Stejneger, L. 1885 A, p. 154.
Zittel, K. A. 1890 A, p. 839. (Phœnicopteri.)

PHŒNICOPTERUS Linn. Type *P. ruber* Linn.

Coues, E. 1884 A, p. 678.
Edwards, A. M. 1871 A, p. 53.
Fürbringer, M. 1888 A.
Gadow, H. 1877 A.
1891 A, pl. lvii, fig. 20.
Parker, W. K. 1889 B.
Selenka, E. 1869 A.

Phœnicopterus copei Shufeldt.

Shufeldt, R. W. 1892 D, p. 410, pl. xv, fig. 13; pl. xvii, figs. 28, 29, 38.
1891 B, p. 820.
Pleistocene; Oregon.

Order HERODII.

Beddard, F. E. 1897 A, p. 469. (Herodiones.)
Cope, E. D. 1898 B, p. 88.
Coues, E. 1884 A, p. 647. (Herodiones.)
Fürbringer, M. 1888 A, p. 1187. (Pelargo-Herodii.)
Gadow, H. 1891 A.
Huxley, T. H. 1867 A, p. 461. (Pelargomorphæ.)
1872 A, p. 234. (Pelargomorphæ.)
Mivart, St. G. 1892 A, p. 272. (Herodiones.)
Seebohm, H. 1889 A. (Herodiones.)
Selenka, E. 1869 A.
Stejneger, L. 1885 A, p. 157.
Zittel, K. A. 1890 A, p. 840. (Pelargo-Herodii.)

Superfamily ARDEOIDEA Stejneger.

Stejneger, L. 1885 A, p. 162. (Ardeoideæ.)
Gadow, H. 1898 A, p. 32. (Ardeæ.)

ARDEIDÆ.

Coues, E. 1884 A, p. 654.
Edwards, A. M. 1871 A, p. 88. ("Ardéides.")
Fürbringer, M. 1888 A.
Gadow, H. 1891 A.
Giebel, C. G. 1866 A, p. 27.
Huxley, T. H. 1867 A, p. 439.
Magnus, H. 1869 A.
Parker, W. K. 1868 A, p. 163. (Ardeinæ.)
Reichenow, A. 1871 A.
Seebohm, H. 1889 A.
Selenka, E. 1869 A.
Zittel, K. A. 1890 A, p. 841.

ARDEA Linn. Type *A. cinerea* Linn.

Coues, E. 1884 A, p. 657.
Edwards, A. M. 1871 A, p. 91.
Gadow, H. 1891 A.
Huxley, T. H. 1867 A, p. 437, fig. 19.
Magnus, H. 1869 A.
Owen, R. 1856 F, p. 209.
Selenka, E. 1869 A, pl. xi, fig. 11; pl. xvii, figs. 8, 9.
Zittel, K. A. 1890 A, p. 841.

Ardea paloccidentalis Shufeldt.

Shufeldt, R. W. 1892 D, p. 411, pl. xvii, fig. 3.
1891 B, p. 819. (No description.)
Pleistocene; Oregon.

Order STEGANOPODES.

Beddard, F. E. 1897 A, p. 468.
Brandt, J. F. 1840 A, p. 91. (Steganopoda.)
Cope, E. D. 1898 B, p. 88.
Coues, E. 1884 A, p. 718.
Fürbringer, M. 1888 A, p. 1168.
Gadow, H. 1891 A.
    1898 A, p. 32.
Giebel, C. G. 1866 A, p. 29. (Steganopoda.)
Huxley, T. H. 1867 A, p. 461. (Dysporomorphæ.)
Mivart, St. G. 1892 A, p. 272.
Pycraft, W. P. 1898 A, p. 82.
Seebohm, H. 1889 A.
Selenka, E. 1869 A.
Shufeldt, R. W. 1888 E.
    1894 C.
    1894 D.
Stejneger, L. 1885 A, p. 179.
Zittel, K. A. 1890 A, p. 841.

Superfamily PELECANOIDEA Stejneger.

Stejneger, L. 1885 A, p. 185. (Pelecanoideæ.)
Shufeldt, R. W. 1899 C. (Pelecanoidea.)
    1894 D. (Pelecanoidea.)

PELECANIDÆ.

Coues, E, 1884 A, p. 721.
Edwards, A. M. 1868 A, i, p. 180.
Fürbringer, A. 1891 A.
Gadow, H. 1891 A.
Huxley, T. H. 1867 A, p. 440.
Mivart, St. G. 1878 A.
Parker, W. K. 1868 A, p. 149. (Pelecaninæ.)
Reichenow, A. 1871 A.
Selenka, E. 1869 A.
Shufeldt, R. W. 1888 E.
    1894 C.
    1894 D.
Zittel, K. A. 1890 A, p. 841.

PELECANUS Linn. Type *P. onocrotalus* Linn.

Brandt, J. F. 1840 A, p. 141.
Coues, E. 1884 A, p. 722.
Edwards, A. M. 1868 A, i, p. 183.
Gadow, H. 1891 A, pl. lvii, fig. 17.
Huxley, T. H. 1867 A, p. 438, fig. 20.
Magnus, H. 1869 A.
Mivart, St. G. 1878 A.
Owen, R. 1856 F, p. 212.
Pycraft, W. P. 1898 A, pp. 84, 98.
Seebohm, H. 1889 A.
Selenka, E. 1869 A, pl. viii, fig. 7.
Shufeldt, R. W. 1888 E, p. 310, figs. 40–43.
    1894 B.
    1894 C, p. 337.
    1894 D, p. 161.
Zittel, K. A. 1890 A, p. 842.

Pelecanus erythrorhynchos ? Gmel.

Coues, F. 1884 A, p. 722. (P. trachyrhynchus.)
Shufeldt, R. W. 1891 B, p. 818.
    1892 D, p. 401.
  Recent; North America: Pleistocene; Oregon.

CYPHORNIS Cope. Type *C. magnus* Cope.

Cope, E. D. 1894 G.
  The position of this genus is in doubt

Cyphornis magnus Cope.

Cope, E. D. 1894 G, p. 451, pl. xx, figs. 11–14.
  Eocene ? ; Vancouvers Island.

SULIDÆ.

Coues, E. 1884 A, p. 720.
Fürbringer, M. 1888 A, p. 1172. (Sulinæ.)
Gadow, H. 1891 A.
Pycraft, W. P. 1898 A, p. 92.
Reichenow, A. 1871 A.
Seebohm, H. 1889 A.
Selenka, E. 1869 A.
Shufeldt, R. W. 1888 E, p. 287.
Stejneger, L. 1885 A, p. 188.
Zittel, K. A. 1890 A, p. 842.

SULA Brisson. Type *S. bassana* (Linn.).

Brandt, J. F. 1840 A, p. 139.
Coues, E. 1884 A, p. 720.
Edwards, A. M. 1868 A.
Gadow, H. 1891 A.
Mivart, St. G. 1878 A.
Parker, W. K. 1868 A, p. 150.
Pycraft, W. P. 1898 A, p. 82.
Seebohm, H. 1889 A.
Selenka, E. 1869 A, pl. viii, fig. 8.
Shufeldt, R. W. 1888 E, p. 287, figs. 24–33.
    1894 B.

Sula loxostyla Cope.

Cope, E. D. 1869 M (1870), p. 236, fig. 53.
Coues, E. 1872 B, p. 349.
    1884 A, p. 824.
  Miocene; North Carolina.

PHALACROCORACIDÆ.

Coues, E. 1884 A, p. 723.
Fürbringer, M. 1888 A, p. 1172. (Phalacrocoracinæ.)
Gadow, H. 1891 A.
Pycraft, W. P. 1898 A, p. 92. (Phalacrocoracinæ.)
Reichenow, A. 1871 A.
Seebohm, H. 1889 A.
Selenka, E. 1869 A.
Shufeldt, R. W. 1888 E, p. 310.
  1894 C, p. 337.
Stejneger, L. 1885 A, p. 190.
Zittel, K. A. 1890 A, p. 842.

PHALACROCORAX Brisson. Type *Pelecanus carbo* Linn.

Coues, E. 1884 A, p. 726.
Edwards, A. M. 1868 A, p. 186.
Gadow, H. 1891 A.
Huxley, T. H. 1867 A, p. 439, fig. 21.
Jeffries, J. A. 1883 A.
  1883 B.
  1884 A.
Parker, W. K. 1868 A, p. 149.
Pycraft, W. P. 1898 A, p. 88.
Seebohm, H. 1889 A.
Selenka, E, 1869 A, pl. viii, fig. 5.
Shufeldt, R. W. 1883 B.
  1888 E, p. 309, fig. 39.
  1894 D, p. 161.
Zittel, K. A. 1890 A, p. 842.

Phalacrocorax idahensis Marsh.

Marsh, O. C. 1870 A, p. 216. (Graculus.)
Cope, E. D. 1869 M (1870), p. 237. (Graculus.)
Coues, E. 1872 B, p. 349. (Graculus.)
  1884 A, p. 824.
King, C. 1878 A, p. 443. (G. idahoensis.)
Zittel, K. A. 1890 A, p. 842. (P. idahoensis.)
  Pleistocene; Idaho.

Phalacrocorax macropus Cope.

Cope, E. D. 1878 H, p. 386. (Graculus.)
  1889 F. (Graculus.)
  1889 S, p. 980. (Graculus.)
Coues, E. 1884 A, p. 824.
Shufeldt, R. W. 1891 B, p. 818.
  1892 D, p. 399, pl. xv, figs. 6–9.
  Pleistocene; Oregon.

Phalacrocorax perspicillatus Pallas.

Coues, E. 1884 A, p. 728.
Lucas, F. A. 1890 B, p. 88, pls. ii–iv.
  1896 A.
Stejneger, L. 1885 A, p. 191, fig. 92.
Stejneger and Lucas 1890 A, pls. ii–iv.
  Recently extinct; Bering Island.

GRACULAVUS Marsh. Type *G. velox* Marsh.

Marsh, O. C. 1872 E, p. 363.
Fürbringer M. 1888 A, p. 1168.
Stejneger, L. 1885 A, p. 30.
Zittel, K. A. 1890 A, p. 840.

The systematic position of this genus is doubtful.

Graculavus pumilis Marsh.

Marsh, O. C. 1872 E, p. 364.
Coues, E. 1872 B, p. 350.
  1884 A, p. 826.
Marsh, O. C. 1873 D, p. 229.
  1880 G, p. 195.
  Cretaceous; New Jersey.

Graculavus velox Marsh.

Marsh, O. C. 1872 E, p. 363.
Coues, E. 1872 B, p. 349.
  1884 A, p. 826.
Marsh, O. C. 1873 D, p. 229.
  1880 G, p. 194.
  Cretaceous; New Jersey.

Order GALLINÆ.

Blanchard, É. 1857 A. (Gallidæ.)
Cope, E. D. 1898 B, p. 89.
Coues, E. 1884 A, p. 571.
Edwards, A. M. 1871 A, p. 161. ("Gallinacés.")
Fürbringer, M. 1888 A, p. 1255. (Gallidæ.)
Gadow, H. 1891 A.
  1898 A, p. 33. (Galliformes.)
Huxley, T. H. 1867 A, p. 459. (Alectoromorphæ.)
  1872 A, p. 234. (Alectoromorphæ.)
Mivart, St. G. 1892 A, p. 274. (Galliformes.)
Owen, R. 1856 F, p. 8.
  1866 B. (Rasores.)
Parker, W. K. 1866 B.
  1868 A, p. 182.
  1870 A.
Selenka, E. 1869 A. (Rasores.)
Shufeldt, R. W. 1888 C. (On Gallus.)
Zittel, K. A. 1890 A, p. 847. (Galliformes.)

Suborder ALECTOROPODES.

Coues, E. 1884 A, p. 573.
Gadow, H. 1898 A, p. 34. (Galli.)
Haeckel, E. 1895 A, p. 415. (Alectornithes.)

TETRAONIDÆ.

Coues, E. 1884 A, p. 576.
Gadow, H. 1891 A.
Huxley, T. H. 1867 A, p. 432, figs. 14. (Tetrao.)
Parker, W. K. 1866 B.
Selenka, E. 1869 A.
Shufeldt, R. W. 1881 B.

TYMPANUCHUS Gloger. Type *Tetrao cupido* Linn.

Coues, E. 1884 A, p. 583. (Cupidonia.)
Shufeldt, R. W. 1881 B, pls. x–xii. (Cupidonia.)

Tympanuchus pallidicinctus Ridgw.

Coues, E. 1884 A, p. 584. (Cupidonia cupido pallidicincta.)
Shufeldt, R. W. 1891 B, p. 820.
1892 D, p. 418.
Recent; Great Plains: Pleistocene; Oregon.

PEDIOCÆTES Baird. Type *Tetrao phasianellus* Linn.

Coues, E. 1884 A, p. 581. (Pediœcetes.)

Pediocætes lucasii Shufeldt.

Shufeldt, R. W. 1892 D, p. 414, pl. xvii, fig. 30.
1891 B, p. 820. (Name; no description.)
Pleistocene; Oregon.

Pediocætes nanus Shufeldt.

Shufeldt, R. W. 1892 D, p. 414, pl. xvii, fig. 37.
1891 B, p. 820. (Name; no description.)
Pleistocene; Oregon.

Pediocætes phasianellus (Linn.).

Coues E. 1884 A, p. 581.
Shufeldt, R. W. 1891 B, p. 820. (P. p. columbianus.)
1892 D, p. 414. (P. p. columbianus.)
Recent; western and northern America: Pleistocene; Oregon.

PALÆOTETRIX Shufeldt. Type *P. gillii* Shufeldt.

Shufeldt, R. W. 1892 D, p. 415.
1891 B, p. 820.

Palæotetrix gillii Shufeldt.

Shufeldt, R. W. 1892 D, p. 415, pl. xvii, fig. 34.
1891 B, p. 820.
Pleistocene; Oregon.

PHASIANIDÆ.

Coues, E. 1884 A, p. 576. (>Meleagrididæ.)
Fürbringer, M. 1888 A, p. 1255. (Meleagrinæ.)
Gadow, H. 1891 A.
Huxley, T. H. 1867 A, p. 432.
Mivart, St. G. 1892 A, p. 275.
Reichenow, A. 1871 A.
Selenka, E. 1869 A.

MELEAGRIS Linn. Type *M. gallopavo* Linn.

Linnæus, C., 1758, Syst. Nat., ed. x, p. 88.
Cope, E. D. 1869 M (1870), p. 238.
Coues, E. 1884 A, p. 576.
Edwards, A. M. 1871 A, p. 171.

Meleagris antiquus Marsh.

Marsh, O. C. 1871 E, p. 126.
Coues, E. 1872 B, p. 347.
1884 A, p. 823.
King, C. 1878 A, p. 412.
Marsh, O. C. 1897 C, p. 527.
Shufeldt, R. W. 1897 A, p. 648.
Oligocene (White River); Colorado.

Meleagris celer Marsh.

Marsh, O. C. 1872 J, p. 261.
Coues, E. 1872 B, p. 348.
1884 A, p, 823.
Shufeldt, R. W. 1897 A, p. 649.
Pleistocene; New Jersey.

Meleagris superbus Cope.

Cope, E. D. 1869 M (1870), p. 229 (M. superbus); p. ii (M. altus).
Amer. Jour. Science 1871 A.
Cope, E. D. 1873 X, p. 298. (M. altus.)
Coues, E. 1872 B, p. 348. (M. altus.)
1884 A, p. 823. (M. altus.)
Marsh, O. C. 1870 H, p. 317. (M. altus; no description.)
1870 I, p. 11. (No description.)
1872 J, p. 260. (M. altus.)
1873 P, p. ix. (M. altus.)
Shufeldt, R. W. 1897 A, p. 648. (M. altus.)
Pleistocene; New Jersey.

Meleagris sp. indet.

Wheatley, C. M. 1871 A.

Meleagris gallopavo has been reported by Dr. Leidy (1889 H, p. 6) from a cave in Pennsylvania. The great majority of species accompanying it live yet in the vicinity.

GALLINULOIDIDÆ.

Lucas F. A. 1900 B, p. 84.

GALLINULOIDES. Type *G. wyomingensis* Eastman.

Eastman, C. R. 1900 E, p. 54.
Lucas, F. A., 1900 B, p. 79.

Gallinuloides wyomingensis Eastman.

Eastman, C. R. 1900 E, p. 54, pl. iv.
Lucas, F. A., 1900 B, p. 79, pl. i.
Eocene (Bridger, Green River shales); Wyoming.

Order RAPTORES.

Cope, E. D. 1898 B, p. 88. (Accipitres.)
Coues, E. 1884 A, p. 496.
Edwards, A. M. 1871 A, p. 406.
Fürbringer, M. 1888 A, p. 1294 (Accipitres); p. 1306 (Strigidæ).
Gadow, H. 1891 A.
1898 A, p, 33. (Falciformes.)
Giebel, C. G. 1866 A, p. 25. (Rapaces.)
Huxley, T. H. 1867 A, p. 462. (Aëtomorpha.)
Huxley, T. H. 1872 A, p. 234. (Aëtomorphæ.)
Magnus, H. 1869 A.
Mivart, St. G. 1892 A, p. 270.
Newton, A. 1868 A. (Aëtomorpha.)
Owen, R. 1856 F, p. 206.
1866 B.
Reichenow, A. 1871 A.
Selenka, E. 1869 A.

Suborder CATHARTIDES Coues.

Coues, E. 1884 A, p. 557.
Gadow, H. 1898 A, p. 33. (Cathartes.)
Mivart, St. G. 1892 A, p. 271. (Cathartes.)

CATHARTIDÆ.

Coues, E. 1884 A, p. 557.
Edwards, A. M. 1871 A, p. 406.
Fürbringer, M. 1888 A, p. 1294.
Huxley, T. H. 1867 A, p. 463.
Newton, A. 1868 A.
Reichenow, A. 1871 A.
Shufeldt, R. W. 1883 C.

PALÆOBORUS Coues. Type *Cathartes umbrosus* Cope.

Coues, E. 1884 A, p. 822.
Gadow, H. 1891 A, pl. xii, figs. 7, 8. (Cathartes.)
Huxley, T. H. 1867 A, p. 441, fig. 22. (Cathartes.)

Palæoborus umbrosus (Cope.)

Cope, E. D. 1874 I, p. 151. (Cathartes.)
1874 O, p. 18. (Cathartes.)
Cope, E. D. 1875 F, p. 73. (Vultur.)
1875 S. (Vultur.)
1877 K, p. 287, pls. lxvii, figs. 10–18; pl. lxviii. (Vultur.)
Coues, E. 1884 A, p. 822.
Shufeldt, R. W. 1883 C. (Cathartes.)
Pliocene; New Mexico.

Suborder ACCIPITRES.

Blanchard, É. 1859 A.
Coues, E. 1884 A, p. 517.
Edwards, A. M. 1871 A, p. 406. (A. diurni.)
Fürbringer, M. 1888 A, p. 1294.
Gadow, H. 1891 A.
1898 A, p. 33.
Huxley, T. H. 1867 A, p. 462. (Gyapætidæ.)
Mivart, St. G. 1892 A, p. 270. (Falcones.)
Parker, W. K. 1868 A, p. 166. (Accipitrinæ.)
Selenka, E. 1869 A.
Zittel, K. A. 1890 A, p. 842.

FALCONIDÆ.

Blanchard, É. 1859 A. (Falco.)
Coues, E. 1884 A, p. 519.
Gadow, H. 1891 A.
Parker, W. K. 1873 A, p. 45.
Selenka, E. 1869 A.
Shufeldt, R. W. 1881 A.

AQUILA Brisson. Type *Falco chrysaëtos* Linn.

Blanchard, É. 1859 A, p. 36.
Coues, E. 1884 A, p. 553.
Nicholson and Lydekker 1889 A, p. 1214, fig. 1106.
Selenka, E. 1869 A, pl. xii, figs. 12-16; pl. xvi, figs. 5, 6; pl. xvii, fig. 13.

Aquila danana Marsh.

Marsh, O. C. 1871 E, p. 125.
Coues, E. 1872 B, p. 346.
  1884 A, p. 822.
King, C. 1878 A, p. 430.
  Pliocene?; Nebraska.

Aquila pliogryps Shufeldt.

Shufeldt, R. W. 1892 D, p. 416, pl. xvii, fig. 33.
  1891 B, p. 820.
  Pleistocene; Oregon.

Aquila sodalis Shufeldt.

Shufeldt, R. W. 1892 D, p. 417, pl. xv, fig. 5.
  1891 B, p. 820.
  Pleistocene; Oregon.

Suborder STRIGES.

Coues, E. 1884 A, p. 498.
Edwards, A. M. 1871 A, p. 474. (Strigides.)
Fürbringer, M. 1888 A, p. 1306. (Strigidæ.)
Gadow, H. 1898 A, p. 36.
Mivart, St. G. 1892 A, p. 271.
Parker, W. K. 1868 A, p. 166. (Striginæ.)
Shufeldt, R. W. 1881 D. (On Speotyto.)

STRIGIDÆ.

Blanchard, É. 1859 A, p. 60. (Strix.)
Coues, E. 1884 A, p. 502.
Fürbringer, M. 1888 A, p. 1306.
Gadow, H. 1891 A.
Huxley, T. H. 1867 A, p. 462.
Newton, A. 1868 A.
Selenka, E. 1869 A.
Shufeldt, R. W. 1881 D. (On Speotyto.)

BUBO Duméril. Type *Strix bubo* Linn.

Blanchard, É. 1859 A, p. 63.
Coues, E. 1884 A, p. 503.
Fürbringer, M. 1888 A, p. 1306.

Bubo leptosteus Marsh.

Marsh, O. C. 1871 E, p. 126.
Coues, E. 1872 B, p. 347.
  1884 A, p. 822.
King, C. 1878 A, p. 404.
Leidy, J. 1872 B, p. 365.
Nicholson and Lydekker 1889 A, p. 1241.
  Eocene (Bridger); Wyoming.

Bubo virginianus (Gmel.).

Coues, E. 1884 A, p. 508.
Shufeldt, R. W. 1891 B, p. 819.
  1892 D, p. 418.
  Recent; North America: Pleistocene; Oregon.

Order PICARIÆ.

Blanchard, É. 1859 A, p. 126.
Coues, E. 1884 A, p. 444.
Fürbringer, M. 1888 A.
Gadow, H. 1891 A.
Huxley, T. H. 1867 A, p. 467. (Celeomorphæ.)
  1872 A, p. 234. (Celeomorphæ.)
Mivart, St. G. 1892 A, p. 266. (Piciformes.)
Owen, R. 1856 F, p. 207. (Scansores.)
Parker, W. K. 1868 A, p. 169.
Selenka, E. 1869 A.
Stejneger, L. 1885 A, p. 368.

UINTORNIS Marsh. Type *U. lucaris* Marsh.

Marsh, O. C. 1872 J, p. 259.
Zittel, K. A. 1890 A, p. 850.
  The position of this genus is in doubt.

Uintornis lucaris Marsh.

Marsh, O. C. 1872 J, p. 259.
Allen, J. A. 1878 A, p. 445.
Coues, E. 1872 B, p. 347.
  1884 A, p. 822.
King, C. 1878 A, p. 404.
  Eocene (Bridger); Wyoming.

Order PASSERES.

Blanchard, É. 1859 A, p. 85.
Cope, E. D. 1898 B, p. 90.
Coues, E. 1884 A, p. 238.
Edwards, A. M. 1871 A, p. 296.
Fürbringer, M. 1888 A, p. 1405.
Gadow, H. 1891 A.
  1898 A, p. 37. (Passeriformes.)
Garrod, A. N. 1876 A.

Giebel, C. G. 1866 A, p. 24.
Haeckel, E. 1895 A, p. 415. (Coracornithes.)
Huxley, T. H. 1867 A, p. 469. (Coracomorphæ.)
Lydekker, R. 1891 A, p. 2.
Mivart, St. G. 1892 A, p. 260.
Owen, R. 1856 F, p. 207. (Insessores.)
Parker, W. K. 1868 A, p. 178. (Passerinæ.)
Parker, W. K. 1875 B.
  1878 B.
Selenka, E. 1869 A.
Shufeldt, R. W. 1881 C. (On Lanius.)
  1881 D. (On Eremophilus.)
Stejneger, L. 1885 A, p. 458.

CORVIDÆ.

Coues, E. 1884 A, p. 414.
Gadow, H. 1891 A.
Parker, W. K. 1872 A.
Shufeldt, R. W. 1888 D.

CORVUS Linn. Type *C. corax* Linn.

Coues, E. 1884 A, p. 415.
Edwards, A. M. 1871 A, p. 302.
Gadow, H. 1891 A, pl. lvii, figs. 9, 47.
Huxley, T. H. 1867 A, p. 451, fig. 32.
Parker, W. K. 1872 A.
Shufeldt, R. W. 1888 D, pl. xv, fig. 1.

Corvus annectens Shufeldt.

Shufeldt, R. W. 1892 D, p. 419, pl. xv, figs. 14–16.
  1891 B, p. 820. (No description.)
  Pleistocene; Oregon.

ICTERIDÆ.

Coues, E. 1884 A, p. 399.
Shufeldt, R. W. 1888 D.
Stejneger, L. 1885 A, p. 544.

SCOLECOPHAGUS Swainson. Type *Turdus carolinus* Müll.

Coues, E. 1884 A, p. 411.
Shufeldt, R. W. 1888 D.

Scolecophagus affinis Shufeldt.

Shufeldt, R. W. 1892 D, p. 418, pl. xv, fig. 10.
  1891 B, p. 820. (No description.)
  Pleistocene; Oregon.

FRINGILLIDÆ.

Coues, E. 1884 A, p. 389.
Stejneger, L. 1885 A, p. 545.

PALÆOSPIZA Allen. Type *P. bella* Allen.

Allen, J. A. 1878 A.
  The relationships of this genus are in doubt.

Palæospiza bella Allen.

Allen, J. A. 1878 A, pl. i, figs. 1, 2.
Cope, E. D. 1881 M.
Coues, E. 1884 A, p. 822.
  Eocene ? (Amyzon shales); Colorado.

CIMOLOPTERYX Marsh. Type *C. rarus* Marsh.

Marsh, O. C. 1892 G, p. 175.
  1889 D, p. 83. (No description.)
  A genus of unknown position among birds.

Cimolopteryx rarus Marsh.

Marsh, O. C. 1892 G, p. 175, pl. iii, fig. 2.
  1889 D, p. 83. (No description.)

Cimolopteryx retusus Marsh.

Marsh, O. C. 1892 G, p. 175.
  Cretaceous (Laramie): Wyoming.

PALÆONORNIS STRUTHIONOIDES Emmons.

Emmons, E. 1857 A, p. 148, fig. 114.
  Triassic ?; North Carolina.
  A fossil of doubtful relationships.

FOSSIL EGG.

Farrington, O. C. 1891 A, pp. 193–200, pls. xx, xxi.
  Miocene; South Dakota.

ICHNITES.

The imprints of the feet of animals on the rocks have been described under various general names, such as *Ichnites*, *Ornithites*, *Ornichichnites*, *Ornithoidichnites*, *Sauroidichnites*, *Batrachoidichnites*. The first attempt to place under generic names the various forms found in North America was made by President Edward Hitchcock in 1845 (Hitchcock, E. 1845 B). This communication the present writer has made the basis for both the generic and the specific names. Many of the names, both generic and specific, were afterwards changed; but this was done in violation of the rules of nomenclature as now recognized. On account of the impossibility of determining with certainty the systematic positions of the animals which made the tracks described, the "genera" are arranged alphabetically.

Bouvé, T. T. 1859 B.
Cope, E. D. 1867 D.
Deane, J. 1844 A.
1844 B.
1844 C.
1845 A.
1845 B.
1845 C.
1845 D.
Edwards, A. Milne 1869 A.
Field, R. 1860 A.
1860 B.
1860 C.
Giebel, C. G. 1847 B, p. 84.
Hitchcock, C. H. 1855 A.
1869 A.
1871 A.
1889 A.
1889 B.
Hitchcock, E. 1836 A.
1837 A.
1837 B.
1841 A.
1843 A.
1844 A.
Hitchcock, E. 1844 B.
1845 A.
1845 B.
1847 A.
1848 A.
1858 A.
1861 A.
1863 A.
1865 A.
Lyell, C. 1842 A.
1843 A.
1846 B.
Marsh, D. 1848 A.
Mitchell, J. 1895 A.
Mudge, B. F. 1866 A.
1874 A.
Pictet, F. J. 1853 A, p. 406.
Quenstedt, F. A. 1852 A, p. 81.
Rogers, H. D. 1842 A.
Sickler, F. K. L. 1835 A.
Silliman, B. 1837 A.
Snow, F. H. 1887 A.
Voigt, F. S. 1835 A.
Zittel, K. A. 1890 A, p. 411.

ALLOPUS Marsh. Type *A. littoralis* Marsh.

Marsh, O. C. 1894 D, p. 83.

Allopus littoralis Marsh.

Marsh, O. C. 1894 D, p. 83.
1894 I, pl. xi, figs. 4, 4*a*.
Miller, S. A. 1897 A, p. 793.
Coal-measures; Kansas.

AMBLYPUS E. Hitch. Type *A. dextratus* E. Hitch.

Hitchcock, E. 1858 A, p. 143.

Amblypus dextratus E. Hitch.

Hitchcock, E. 1858 A, p. 143, pl. xxv, fig. 7; pl. xlviii, fig. 5.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

ANCYROPUS E. Hitch. Type *Sauroidichnites heteroclitus* E. Hitch.

Hitchcock, E. 1845 B, p. 24.
1848 A, p. 242.
1858 A, p. 138.

Ancyropus heteroclitus E. Hitch.

Hitchcock E. 1845 B, p. 24 (A. heteroclitus, A. jacksonianus.)
Hitchcock, C. H. 1889 B, p. 119.
Hitchcock, E. 1841 A, p. 479, pl. xxx, fig. 2 (Sauroidichnites heteroclitus); fig. 3 (Saur. jacksonii).
1848 A, p. 243, pl. xv, figs. 3–5.
1858 A. p. 139, pl. xxv, figs. 3, 4; pl. liii, figs. 1, 2.
Triassic; Connecticut.

ANOMŒPUS E. Hitch. Type *A. scambus* E. Hitch.

Hitchcock, E. 1848 A, p. 220.
Hitchcock, C. H. 1889 A.
1889 B.
Hitchcock, E. 1858 A, p. 55.
1861 A, p. 150.
1863 A, p. 48.
1865 A, p. 31.
Lydekker, R. 1890 A, p. 221.
Warren, J. C. 1854 A, p. 35.

Anomœpus? culbertsonii (King.)

King, A. F. 1844 A, p. 176, figure. (Ornithichnites.)
1845 A, fig. 2. (Ornithichnites.)
1845 C, p. 216, fig. 4. (Ornithichnites.)
Lyell, C. 1846 A, p. 25. (No name.)
Coal-measures; Pennsylvania.
Assigned to this genus provisionally.

Anomœpus cuneatus C. H. Hitch.

Hitchcock, C. H. 1889 B, pp. 118, 125.
Triassic; Massachusetts.

Anomœpus curvatus E. Hitch.

Hitchcock, E. 1863 A, p. 48, fig. 1.
1863 B, p. 86. (Apatichnus curvatus.)
1865 A, p. 5, pl. i, fig. 2; pl. xv, fig. 2.
1889 B, p. 118.
Lydekker, R. 1890 A, p. 221.
Triassic; Connecticut.

Anomœpus? gallinuloides (King).

King, A. F. 1844 A, p. 176, figure. (Ornithichnites.)
1845 A, fig. 1. (Ornithoidichnites.)
Lyell, C. 1846 A, p. 25. (No name.)
Coal-measures; Pennsylvania.
This track is assigned to *Anomœpus* only provisionally.

Anomœpus gracillimus (E. Hitch).

Hitchcock, E. 1845 B, p. 23. (Eubrontes.)
Deane, J. 1861 A, p. 36, pl. iv, figs. 2, 4. (Grallator.)
Hitchcock, C. H. 1865 A, p. 6. (Anomœpus.)
1889 B, pp. 118, 123.
Hitchcock, E, 1844 A, p. 306, pl. iii, fig. 4. (Ornithoidichnites.)
1848 A, p. 175, pl. ii, fig. 3. (Brontozoum.)
1858 A, p. 73, pl. xiii, fig. 5; pl. xxxix, fig. 2. (Grallator.)
1865 A, p. 6. (Anomœpus.)
Lydekker, R. 1890 A, p. 221.
Mantell, G. A. 1846 A, p. 38. (Ornithichnites.)
Warren, J. C. 1854 A, p. 27. (Brontozoum.)
Triassic; Massachusetts, Pennsylvania.

Anomœpus intermedius E. Hitch.

Hitchcock, E. 1865 A, pp. 2, 7, pl. i, fig. 1; pl. xv, fig. 1.
Hitchcock, C. H. 1889 B, p. 118.
Hitchcock, E. 1863 A, pp. 49, 53. (No description.)
1863 B, pp. 85, 86. (Name only.)
Lydekker, R. 1890 A, p. 221.
Triassic; Massachusetts, Connecticut.
This species is based on part of *Brontozoum isodatylum* Edw. Hitchcock, 1858 A, p. 69. See under *Plesiornis minor*.

Anomœpus isodactylus C. H. Hitch.

Hitchcock, C. H. 1889 B, pp. 118, 124.
Triassic; Massachusetts.

Anomœpus major E. Hitch.

Hitchcock, E. 1858 A, p. 56, pl. viii.
Deane, J. 1861 A, p. 48, pl. xxxi.
Eyermann, J. 1886 A, p. 32.
Hitchcock, C. H. 1871 A, p. xxi, fig. 2.
1873 A, p. 433, fig. 1.
1889 B, p. 118.
Woodworth, J. B. 1895 A.
Triassic; Massachusetts, New Jersey.

Anomœpus minimus E. Hitch.

Hitchcock, E. 1865 A, p. 5, pl. ii, figs. 1, 2.
Hitchcock, C. H. 1889 B, p. 118.
Hitchcock, E. 1863 B, p. 85. (Name only.)
Triassic; Massachusetts.

Anomœpus scambus E. Hitch.

Hitchcock, E. 1848 A, p. 222, pl. xiii, figs. 1-6.
Dana, J. D. 1896 A, p. 752, fig. 1175.
Deane, J. 1845 C, p. 80, figs. A, B. (No name.)
1847 A, p. 78, fig. 3. (No name.)
1861 A, p. 48, pl. xxxii. (A. minor.)
Eyermann, J. 1889 A, p. 32. (A. minor.)
Hitchcock, C. H. 1855 A, p. 394.
1889 B, p. 118. (A. minor.)
Hitchcock, E. 1858 A, p. 57, pl. ix, figs. 1, 2; pl. xxxiv, fig. 2. (A. minor.)
Triassic; Massachusetts, New Jersey.

ANTHRACOPUS Leidy. Type *A. ellangowensis* Leidy.

Leidy, J. 1879 B, p. 164.

Anthracopus ellangowensis Leidy.

Leidy, J. 1879 B, p. 164.
Mason, W. D. H. 1878 A, pp. 717, 725. (No name.)
Coal-measures; Pennsylvania.

ANTICHEIROPUS E. Hitch. Type, no species indicated.

Hitchcock, E. 1865 A, p. 10.

Anticheiropus hamatus E. Hitch.

Hitchcock, E. 1865 A, p. 10, pl. ix, figs. 1, 2.
Hitchcock, C. H. 1889 B, p. 118.
Triassic; Massachusetts.

Anticheiropus pilulatus E. Hitch.

Hitchcock, E. 1865 A, p. 10, pl. ix, fig. 3.
Hitchcock, C. H. 1889 B, p. 118.
Triassic; Massachusetts.

ANTIPUS E. Hitch. Type *A. flexiloquus* E. Hitch.

Hitchcock, E. 1858 A, p. 115.

Antipus bifidus E. Hitch.

Hitchcock, E. 1858 A, p. 116, pl. xxxvi, fig. 8; pl. xlviii, fig. 10.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

Antipus flexiloquus E. Hitch.

Hitchcock, E. 1858 A, p. 115, pl. xx, fig. 10.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

APATICHNUS E. Hitch. Type *A. circumagens* E. Hitch.

Hitchcock, E. 1858 A, p. 99.
1861 A, p. 150.

Apatichnus bellus E. Hitch.

Hitchcock, E. 1858 A, p. 101, pl. xvii, fig. 6; pl. xxxv, fig. 8; pl. xlv, fig. 6.
Dana, J. D. 1896 A, p. 752, fig. 1174.
Hitchcock, C. H. 1889 B, p. 118.
Triassic; Massachusetts.

Apatichnus circumagens E. Hitch.

Hitchcock, E. 1858 A, p. 100, pl. xvii, fig. 5; pl. xxxv, fig. 6.
Deane, J. 1861 A, p. 37, pl. vi, fig. 1; pl. xix; pl. xxxiv, fig. 1, 2.
Hitchcock C. H. 1889 B, p. 118.
Triassic; Massachusetts.

Apatichnus crassus C. H. Hitch.

Hitchcock, C. H. 1889 B, pp, 118, 122, 124.
Triassic; New Jersey.

Apatichnus holyokensis C. H. Hitch.

Hitchcock, C. H. 1889 B, pp. 118, 123, 124.
Triassic; Massachusetts.

ARACHNICHNUS E. Hitch. Type *A. dehiscens* E. Hitch.

Hitchcock, E. 1858 A, p. 117.

Arachnichnus dehiscens E. Hitch.

Hitchcock, E. 1858 A, p. 117, pl. xx, figs. 12, 13; pl. xxxvii, fig. 2.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

ARGOIDES E. Hitch. No type; *A. isodactylatus* may be taken.

Hitchcock, E. 1845 B, p. 24.
1848 A, p. 184. (Argozoum.)
1858 A, p. 81. (Argozoum.)

Argoides isodactylatus E. Hitch.

Hitchcock, E. 1845 B, p. 24.
Adams, C. B. 1846 A, p. 215. (Argoides minimus?)
Hitchcock, C. H. 1889 B, p. 118. (Argozoum paridigitatum.)
Hitchcock, E. 1836 A, p. 325, fig. 9. (Ornithichnites minimus.)
1837 A, p. 175. (Ornithichnites minimus.)
1841 A, p. 496, pl. xlv, figs. 38, 39. (Ornithoidichnites isodactylus.)
1848 A, p. 187, pl. vi, figs, 4, 5. (Argozoum paridigitatum.)
1858 A, p. 82, pl. xiv, fig. 3; pl. xxxv, fig. 4; pl. xxxix, fig. 1. (Argozoum paridigitatum.
Warren, J. C. 1854 A, p. 29. (Argozoum paridigitatum.)
Triassic; Massachusetts, Connecticut.

Argoides macrodactylatus (E. Hitch.).

Hitchcock, E. 1845 B, p. 25. (Platypterna.)
Hitchcock, C. H. 1889 B, p. 118. (Argozoum disparidigitatum.)
Hitchcock, E. 1841 A, p. 494, pl. xliii, fig. 35. (Ornithoidichnites.)
Hitchcock, E. 1848 A, p. 186, pl. vi, fig. 3. (Argozoum disparidigitatum.)
1858 A, p. 82, pl. xiv, fig. 2. (Argozoum disparidigitatum.)
arren, J. C. 1854 A, p. 29. (Argozoum disparidigitatum.)
Triassic; Massachusetts, Connecticut, New Jersey.

Argoides redfieldianus E. Hitch.

Hitchcock, E. 1845 B, p. 24.
Hitchcock, C. H. 1889 B, p. 118. (Argozoum.)
Hitchcock, E. 1844 A, p. 304, pl. iii, fig. 1. (Ornithoidichnites redfieldii.)
1848 A, p. 185. (Argozoum.)
1858 A, p. 81, pl. xiv, fig. 1. (Argozoum.)
1863 B, p. 85. (Argozoum redfieldianum, doubtful species.)
1865 A, p. 2. (Argozoum.)
Triassic; Massachusetts.

Argoides robustus E. Hitch.

Hitchcock, E. 1845 B, p. 24.
Giebel, C. G. 1847 B, p. 36. (Ornithichnites robustus.)
Hitchcock, E. 1836 A, p. 319, fig. 3. (Ornithichnites ingens minor.)
1837 B, p. 175. (O. robustus.)
Triassic: Massachusetts.

BAROPUS Marsh. Type *B. lentus* Marsh.

Marsh, O. C. 1894 D, p. 83.

Baropus lentus Marsh.

Marsh, O. C. 1894 D, p. 83, pl. ii, fig. 5.
Dana, J. D. 1896 A, p. 684, fig. 1116.
Marsh, O. C. 1894 I, p. 338, pl. xi, fig. 5.
1895 C, p. 492, fig. 11.
Miller, S. A. 1897 A, p. 793.
Coal-measures; Kansas.

BATRACHICHNUS Woodworth. Type *B. plainvillensis* Woodworth.

Woodworth, J. B. 1900 A, p. 453.

Batrachichnus plainvillensis Woodworth.

Woodworth, J. B. 1900 A, p. 453, pl. xl; text-fig. 1.
Carboniferous; Massachusetts.

BATRACHOIDES E. Hitch. Type *Batrachoides nidificans* E. Hitch.

Hitchcock, E. 1858 A, p. 121.
Hitchcock, C. H. 1871 A, p. xxi.
1873 A, p. 436.
Shepard, C. U. 1867 A.
The name Batrachoides is preoccupied by Lacépède for a genus of fishes.

Batrachoides nidificans E. Hitch.

Hitchcock, E. 1858 A, p. 122, pl. xxi, fig. 5; pl. l, figs. 1-4.
Hitchcock, C. H. 1889 B, p. 119.
Shepard, C. U. 1867 A.
Triassic; Massachusetts.
Batrachoides antiquior described in Hitchcock, E. 1858 A, p. 123, pl. xxi, fig. 6; pl. l, fig. 2, was rejected in 1865. (Hitchcock C. H. 1865 A, p. 2.) It is regarded as wholly of inorganic origin.

BATRACHOPUS E. Hitch. Type *B. deweyanus* E. Hitch.

Hitchcock E. 1845 B, p. 25.
Hitchcock, C. H. 1871 A, p. xxi. (Anisichnus, to replace Anisopus preoccupied.)
Hitchcock, E. 1848 A, p. 226. (Anisopus.)
1858 A, pp. 60, 61. (Anisopus.)
Zittel, K. A. 1890, p. 411.

Batrachopus deweyanus E. Hitch.

Hitchcock, E. 1845 B, p. 25.
Dana, J. D. 1896 A, p. 751, fig. 1171. (Anisopus.)
Deane, J. 1845 A, p. 161, figure. (Batrachoidichnites deweyi.)
1861 A, p. 46, pl. xxv, fig. 2; pl. xxvi, fig. 2. (Anisopus.)
Hitchcock, C. H. 1855 A, p. 394. (Anisopus.)
1889 B, p. 119. (Anisichnus.)
Hitchcock, E. 1841 A, p. 489, pl. xxxix, fig. 26; pl. xlviii, fig. 44. (Ornithoidichnites parvulus.)
1843 A, p. 261, pl. xi, fig. 9. (Sauroidichnites deweyi.)
1844 A, p. 305. (Batrachoidichnites parvulus, B. deweyi.)
1848 A, p. 226, pl. xvi, figs. 5, 6. (Anisopus.)
Hitchcock, E. 1858 A, p. 60, pl. ix, fig. 3; pl. xii, fig. 2; pl. xlii, figs. 1, 2; pl. liii, fig. 8; pl. lviii, fig. 11. (Anisopus.)
Triassic; Connecticut.

Batrachopus gracilior (E. Hitch.).

Hitchcock, E. 1863 A, p. 54. (Anisopus.)
Hitchcock, C. H. 1889 B, p. 119. (Anisichnus.)
Hitchcock, E. 1865 A, p. 6, pl. i, fig. 3. (Anisopus.)
Triassic; Massachusetts.

Batrachopus gracilis (E. Hitch.).

Hitchcock, E. 1848 A, p. 228, pl. xvi, fig. 34. (Anisopus.)
Dana, J. D. 1896 A, p. 751, fig. 1172. (Anisopus.)
Deane, J. 1861 A, p. 46, pl. xxvi, fig. 1. (Anisopus.)
Hitchcock, C. H., 1889 B, pp. 119, 122, 123. (Anisichnus.)
Hitchcock, E. 1858 A, p. 61, pl. ix, fig. 4; pl. xxxv, fig. 5; pl. xxxvi, figs. 1-5; pl. lviii, fig. 9. (Anisopus.)
1861 A, p. 155, fig. 4. (Anisopus.)
Lydekker, R. 1890 A, p. 221. (Anisopus.)
Triassic; Massachusetts, New Jersey, Pennsylvania.

CHEIROTHEROIDES E. Hitch. Type *C. pilulatus* E. Hitch.

Hitchcock, E. 1858 A, p. 130.

Cheirotheroides pilulatus E. Hitch.

Hitchcock, E. 1858 A, p. 130, pl. xxiii, figs. 3, 4; pl. xxxvi, fig. 6; pl. liv, fig. 3.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

CHELICHNUS Jardine. Type *Testudo duncani* Owen.

Jardine, W., 1850, Ann. Nat. Hist., vi, p. 208.

Chelichnus wymanianus Lea.

Lea, I. 1856 C, p. 78.
Cope, E. D. 1871 C, p. 242.
Lea, I. 1856 B, p. 123.
Triassic; Pennsylvania.

CHELONOIDES E. Hitch. Type *C. incedens* E. Hitch.

Hitchcock, E. 1858 A, p. 140.

Chelonoides incedens E. Hitch.

Hitchcock, E. 1858 A, p. 140, pl. xxxi, fig. 3
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

CHIROTHERIUM Kaup. Type *C. barthii* Kaup.

Kaup, J. J., 1835, Thierreich, i, p, 246; figure, p. 247.
The spelling Cheirotherium is usually employed for this genus. The original form is given above.
Cunningham, J. 1889 A, p. 12.
Gaudry, A. 1890 C, p. 171.
Hitchcock, C. H. 1869 A, p, 133.
1873 A, p. 436.
1889 A, p. 186.
King, A. T. 1845 A, p. 343. (Thenaropus,[1] type *T. heterodactylus.*)
Lortet, L. 1892 A, p. 125.
Lyell, C. 1846 A, p. 25.
Miller, S. A. 1889 A, p. 619.
Neues Jahrbuch Mineral., etc., 1835, pp. 110, 111, 122, 243.
Owen, R. 1860 E, p. 163.
Quenstedt, F. A. 1885 A, p. 121.
Warren, J. C. 1856 A.
Zittel, K. A. 1890 A, p. 4.

Chirotherium? heterodactylum (King.)

King, A. T. 1845 A, pp. 343, 348, figs. 7a–7c. (Thenaropus.)
1845 C, p. 216. (Thenaropus.)
Lea, I. 1853 A, p. 187. (Thenaropus.)
Lyell, C. 1846 A, p. 25. ("Cheirotherium.")
Coal-measures; Pennsylvania.

Chirotherium? reiteri Moore.

Moore, W. D. 1873 A.
Coal-measures; Pennsylvania.

COLLETTOSAURUS Cox. Type *C. indianaensis* Cox.

Cox, E. T. 1874 A, p. 247.
Miller, S. A. 1889 A, p. 620.

Collettosaurus indianaensis Cox.

Cox, E. T. 1874 A, p. 247, plate.
Amer. Jour. Science 1876 A.
Coal-measures; Indiana.

COMPTICHNUS E. Hitch. Type *C. obesus* E. Hitch.

Hitchcock, E. 1865 A, p. 9.

Comptichnus obesus E. Hitch.

Hitchcock, E. 1865 A, p. 9, pl. v, fig. 4; pl. xviii, fig. 6.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

CORVIPES E. Hitch. Type *C. lacertoideus* E. Hitch.

Hitchcock, E. 1858 A, p. 98.

Corvipes lacertoideus E. Hitch.

Hitchcock, E. 1858 A, p. 98, pl. xvii. fig. 3; pl. xlvii, fig. 1; pl. xxxv, fig. 7.
Hitchcock. C. H. 1889 B, pp. 118, 122.
Triassic; Massachusetts, Connecticut.

CRUCIPES Butts. Type *C. parvus* Butts.

Butts, E. 1891 A, p. 19.

Crucipes parvus Butts.

Butts, E. 1891 A, p. 19.
Coal-measures; Missouri.

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[1] This name had previously been employed by King for tracks of a very different kind.

CUNICHNOIDES E. Hitch. Type *C. marsupialoides* E. Hitch.

Hitchcock, E. 1858 A, p. 54.

Cunichnoides marsupialoides E. Hitch.

Hitchcock, E. 1858 A, p. 55, pl. ix, fig. 5; pl. lx, figs. 2, 3, 4.
Hitchcock, E. 1861 A, p. 154.
Triassic; Connecticut.

DROMOPUS Marsh. Type *D. agilis* Marsh.

Marsh, O. C. 1894 D, p. 82.
Fürbringer, M. 1900 A, pp. 627, 678.

Dromopus agilis Marsh.

Marsh, O. C. 1894 D, p. 182, pl. ii, fig. 3; pl. iii, fig. 3.
Dana, J. D. 1896 A, p. 684, fig. 1115.
Marsh, O. C. 1894 I, p. xi, fig. 3.
1895 D, p. 492, fig. 10.
Miller, S. A. 1897 A, p. 793.
Coal-measures; Kansas.

EUBRONTES E. Hitch. No type was mentioned, but *E. giganteus* may be taken.

Hitchcock, E. 1845 B, p. 23.
Hitchcock, C. H. 1873 A, p. 432 (Brontozoum).
1889 B, p. 118. (Brontozoum.)
Hitchcock, E. 1847 A, p. 50. (Brontozoum.)
1848 A, p. 169. (Brontozoum.)
1858 A, p. 63. (Brontozoum.)
Huxley, T. H. 1876 B, xiii, p. 515. (Brontozoum.)
Lydekker, R. 1890 A, p. 220. (Brontozoum.)
Owen, R. 1860 E, p. 290. (Brontozoum.)

Brontozoum is a substitute name for the earlier *Eubrontes.*

Eubrontes approximatus (E. Hitch.).

Hitchcock, E. 1865 A, p. 23, pl. x, fig. 2. (Brontozoum.)
Hitchcock, C. H. in Hitchcock, E. 1865 A, p. 24. (Brontozoum.)
1889 B, pp. 118, 121, 122, 123. (Brontozoum.)
Triassic; Massachusetts, New Jersey.

This species is based on portions of *Eubrontes giganteus*, but the writer can not determine whether or not any of the figures which have been published to illustrate *E. giganteus* belong here.

Eubrontes dananus E. Hitch.

Hitchcock, E. 1845 B, p. 23.
Cook, G. H. 1885 A, p. 96. (Brontozoum sillimanium.)
Deane, J., 1861 A, p. 37, pls. vii, ix, x.
Hitchcock, C. H. 1889 B, pp. 118, 122, 123. (Brontozoum sillimanium.)
Hitchcock, E. 1836 A, p. 318. (Ornithichnites tuberosus, part.)
1837 A, p. 175. (Ornithichnites tuberosus.)
1841 A, p. 486, in part, pl. xxxvii, fig. 21; pl. xxxviii, fig. 22 (Ornithoidichnites tuberosus); p. 488 (Ornithoidichnites cuneatus, in part).
1843 A, p. 254 (Ornithoidichnites tuberosus); p. 256, pl. xi, fig. 2 (O. sillimanii).
1844 A, p. 300. (O. tuberosus, part?.)
1847 A, p. 49. (Brontozoum sillimanium.)
1848 A, p. 171, pl. iii, fig. 2. (B. sillimanium.)
1858 A, p. 68, pl. xii, fig. 3: pl. xxxiii, figs. 4, 5; pl. xliii, fig. 6. (B. sillimanium.)
1865 A, p. 7, pl. v, fig. 1. (B. sillimanium.)
Lydekker, R., 1890 A, p. 220. (B. sillimani.)
Redfield, W. C. 1843 A, p. 136. (Ornithoidichnites tuberosus.)
Warren, J. C. 1854 A, p. 27. (B. sillimanium.)
Triassic; Massachusetts, Connecticut, New Jersey, Pennsylvania.

Eubrontes divaricatus (E. Hitch.).

Hitchcock, E. 1865 A, p. 7. (Brontozoum.)
Cook, G. H. 1885 A, p. 96. (Brontozoum.)
Hitchcock, C. H. 1889 B, p. 126. (Brontozoum.)
Hitchcock, E, 1865 A, p. 2. (B. isodactylum, in part.)
Triassic; Massachusetts, Connecticut.

This species is based partly on *Brontozoum isodactylum*, Edw. Hitchcock, 1858 A, p. 69. See under *Plesiornis minor.*

Eubrontes expansus E. Hitch.

Hitchcock, E. 1845 B, p. 23.
1841 A, p. 487, pl. xxxviii, fig. 23; pl. xxxix, fig. 24. (Ornithoidichnites.)
1848 A, p. 174, pl. iii, fig. 1. (Brontozoum.)
Triassic; Massachusetts.

The materials on which this species was based have evidently been assigned to some other species; which one can not be determined.

Eubrontes exsertus (E. Hitch.).

Hitchcock, E. 1858 A, p. 67, pl. xii, fig. 1; pl. xxxvii-li; pl. lvii, fig. 3. (Brontozoum).
Deane, J., 1861 A, p. 39, pl. xiii. (Brontozoum).
Hitchcock, C. H. 1889 B. (Brontozoum.)
Triassic; Massachusetts.

Eubrontes giganteus E. Hitch.

Hitchcock, E. 1845 B, p. 23.
Cook, G. H. 1885 A, p. 96. (Brontozoum,)
Dana, J. D. 1896 A, p. 752, fig. 1177. (Brontozoum.)
Deane, J. 1861 A, p. 42, pl. xv. (Brontozoum.)
Giebel, C. G. 1847 B, p. 35. (Ornithichnites.)
Hitchcock, C. H. 1889 B. (Brontozoum.)
itchcock, E, 1836 A, p. 317. (Ornithichnites.)
1837 A, p. 175. (Ornithichnites.)
1841 A, p. 484, pl. xxxvi, fig. 18. (Ornithoidichnites.)
1845 A, p. 63. (Ornithoidichnites.)

Hitchcock, E. 1847 A, p. 57. (Brontozoum.)
1848 A, p. 169, pl. i, fig. 1. (Brontozoum.)
1858 A, p. 64, pl. xxxiii, figs. 1-3; pl. xli, fig. 1; pl. liii, fig. 7; pl. lvii, fig. 1. (Brontozoum.)
1861 A, p. 149. (Brontozoum.)
1865 A, p. 23, fig. 1. (Brontozoum.)
Lydekker, R. 1890 A, p. 220.
Owen, R. 1860 E, p. 289. (Brontozoum.)
Pictet, F. J. 1853 A, p. 406, pl. xx, fig. 8. (Ornithichnites.)
Quenstedt, F. A. 1852 A, p. 82. (Ornithichnites.)
Warren, J. C. 1854 A, p. 25. (Brontozoum.)
Triassic; Massachusetts, Connecticut, New Jersey.

Eubrontes minusculus (E. Hitch.)

Hitchcock, E. 1858 A, p. 65, pl. xi, fig. 1; pl. xl, fig. 2; pl. xli, fig. 1; pl. xliii, fig. 3; pl. lvii, fig. 2. (Brontozoum.)
Cook, G. H. 1885 A, p. 96. (Brontozoum.)
Deane, J. 1861 A, p. 41, pls. xiv, xvi, xvii. (Brontozoum.)
Hitchcock, C. H. 1889 B, pp. 118, 122. (Brontozoum.)
Triassic; Massachusetts, New Jersey.

Eubrontes tuberatus (E. Hitch.)

Hitchcock, E. 1858 A, p. 66, pl. xl, fig. 2; pl. lii, fig. 7. (Brontozoum.)
Hitchcock, C. H. 1889 B, p. 118. (Brontozoum.)
Triassic; Massachusetts.

Eubrontes tuberosus E. Hitch.

Hitchcock, E. 1845 B, p. 23.
Deane, J. 1861 A, p. 39, pl. xii. (Brontozoum validum.)
Hitchcock, C. H. 1889 B, p. 118. (B. validum.)
Hitchcock, E. 1836 A, p. 318. (Ornithichnites tuberosus, part.)
1841 A, p. 486, in part, pl. xxxvii, fig. 20. (Ornithoidichnites.)
1848 A, p. 172, pl. ii, figs. 1, 2. (Brontozoum loxonyx.)
1858 A, p. 67, pl. xii, fig. 2; pl. xxxviii–li; pl. lvii, fig. 3. (Brontozoum validum.)
Lydekker, R. 1890 A, p. 220. (B. validum.)
Warren, J. C. 1854 A, p. 27. (B. loxonyx.)
Triassic; Massachusetts.

EUPALAMOPUS nom. nov. Type *Palamopus dananus* E. Hitch. = *P. clarki* E. Hitch.

Hitchcock, E. 1848 A, p. 217. (Palamopus, not of 1845.
1858 A, p. 127. (Palamopus, not of 1845.)

This generic name is intended as a substitute for *Palamopus* E. Hitch., 1848. The latter name had been employed in 1845 to notate a genus based on *P. anomalus* E. Hitch., later called *Macropterna recta* E. Hitch.

Eupalamopus dananus (E. Hitch.).

Hitchcock, E. 1848 A, p. 217, pl. xi, figs. 1, 2. (Palamopus.)
Hitchcock, C. H. 1889 B, p. 119. (P. clarki.)
Hitchcock, E. 1858 A, p. 127, pl. xxiii, fig. 2; pl. xliv, fig. 2. (P. clarki.)
Triassic; Massachusetts.

EXOCAMPE E. Hitch. Type *E. arcta* E. Hitch.

Hitchcock, E. 1858 A, p, 142.

Through error this genus is called, on pl. xxv of Hitchcock's paper of 1858, *Hectocampe*.

Hitchcock, C. H. 1889 B, p. 119.
Hitchcock, E. 1863 B, p. 86. (Insufficient description).
Triassic; Massachusetts.

Exocampe arcta E. Hitch.

Hitchcock, E. 1858 A, p. 143, pl. xxv, figs. 5, 6, 10; pl. xlix, fig. 5.
Deane, J. 1861 A, p. 57, pl. xxxix.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

Exocampe minima E. Hitch.

Hitchcock, E. 1865 A, p. 11, pl. xviii, fig. 3, and Appendix.

Exocampe ornata E. Hitch.

Hitchcock, E. 1858 A, p. 143, pl. xxv, fig. 11; pl. lviii. figs. 1, 6.
Deane, J. 1861 A, p. 57, pl. xxxviii, fig. 1.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

FULICOPUS E. Hitch. Type *F. lyellianus* E. Hitch.

Hitchcock, E. 1845 B, p. 23.
1848 A, p. 177. (Æthyopus.)
1858 A, p. 70. (Amblonyx.)
Warren, J. C. 1854 A, p. 28. (Æthyopus.)

Fulicopus giganteus (E. Hitch.).

Hitchcock, E. 1858 A, p. 71, pl. xiii, fig. 1; pl. xxxviii, figs. 1, 2; p. lvii, figs. 5. (Amblonyx.)
Hitchcock, C. H. 1889 B, p. 118. (Amblonyx.)
Hitchcock, E. 1865 A, p. 2. (Amblonyx.)
Triassic; Massachusetts.

Fulicopus lyellianus (E. Hitch.).

Hitchcock, E. 1845 B, p. 23.
Hitchcock, C. H. 1889 B, p. 118. (Amblonyx.)
Hitchcock, E. 1843 A, p. 257, pl. xi, fig. 1. (Ornithoidichnites lyellii.)
1848 A, p. 178, pl. iv, fig. 1. (Æthyopus.)
1858 A, p. 71, pl. xiii, fig. 2; pl. xxviii, fig. 2. (Amblonyx.)
1863 B, p. 85. (A. lyellianus., doubtful species.)
1865 A, p. 2. (Amblonyx.)
Warren, J. C. 1854 A, p. 28. (Æthyopus.)
Triassic; Massachusetts.

GIGANDIPUS E. Hitch. Type *G. caudatus* E. Hitch.

Hitchcock, E. 1856 A, p. 97.
Hitchcock, C. H. 1873 A, p. 434, fig. 3. (Gigantitherium.)
Hitchcock, E. 1855 A, p. 416. (Gigadipus; no definition.)
1858 A, p. 93. (Gigantitherium.)
Warren, J. C. 1856 A.

Gigandipus caudatus E. Hitch.

Hitchcock, E. 1856 A, p. 97, text-figures.
Hitchcock, C. H. 1889 B, p. 118. (Gigantitherium.)
Hitchcock, E. 1855 A, p. 416. (Gigadipus: insufficient description.)
Hitchcock, E. 1858 A, p. 93, pl. xvi, figs. 1,2; pl. xliv, fig. 4. (Gigantitherium.)
Triassic; Massachusetts.

Gigandipus minor (E. Hitch.).

Hitchcock, E. 1858 A, p. 95, pl. xvii, fig. 1; pl. xli, fig. 2; pl. xlii, fig. 2. (Gigantitherium.)
Hitchcock, C. H. 1889 B, p. 118. (Gigantitherium.)
Triassic; Massachusetts.

GRALLATOR E. Hitch. No type assigned.

Hitchcock, E. 1858 A, p. 72.
Lydekker R. 1890 A, p. 222.

Grallator cuneatus E. Hitch.

Hitchcock, E. 1858 A, p. 74, pl. xiii, fig. 6; pl. xxxix, figs. 1,3; pl. xli, figs. 1,2.
Deane, J. 1861 A, p. 38, pl. viii.
Eyermann, J. 1889 A, p. 32.
Hitchcock, C. H. 1873 A. p. 432.
1889 B, pp. 118,122.
Hitchcock, E. 1841 A, p. 488, text-fig. 106; pl. xxxix, fig. 25; pl. xlviii, figs. 45,55. (Ornithoidichnites.)
1843 A, p. 258. (Ornithoidichnites.)
Lydekker, R. 1890 A, p. 222.
Triassic; Connecticut, New Jersey.

Grallator cursorius E. Hitch.

Hitchcock, E. 1858 A, p. 72, pl. xiii, fig. 3; pl. lviii, fig. 4.
Hitchcock, C. H., 1889 B, pp. 118,122.
Triassic; Massachusetts, New Jersey.

Grallator formosus E. Hitch.

Hitchcock, E. 1858 A, p. 75, text-fig., p. 77.
Cook, G. H. 1885 A, p. 96.
Deane, J. 1861 A, p. 39, pl. xi.
Hitchcock, C. H. 1889 B, pp. 118,122.
Triassic; Connecticut, Massachusetts, New Jersey.

Grallator gracilis C. H. Hitch.

Hitchcock, C. H. 1865 A, p. 8, pl. ix, fig. 7.
1869 A.
1889 B, p. 118.
Triassic; Massachusetts, New Jersey.

Grallator parallelus E. Hitch.

Hitchcock, E. 1847 A, p. 50, fig. 2. (Brontozoum)
Cook, G. F. 1885 A, p. 96.
Hitchcock, C. H. 1889 B, pp. 118,122.
Hitchcock, E. 1836 A, p. 318. (Ornithichnites tuberosus dubius.)
1837 B, p. 175. (O. parallelus.)
1848 A, p. 175, pl. iii, figs. 3,4. (Brontozoum.)
1863 B, p. 86.
1865 A, p. 7, pl. iv, fig. 1.
Warren, J. C. 1854 A, p. 27. (Brontozoum.)
Triassic; Massachusetts, New Jersey.

Grallator tenuis E. Hitch.

Hitchcock, E. 1858 A, p. 73, pl. xiii, fig. 4; pl. liii, fig. 5.
Deane, J. 1861 A, p. 36, pl. iv, fig. 3; pl. xxvii, fig. 2.
Eyermann, J. 1889 A, p. 32.
Hitchcock, C. H, 1889 B, p, 118.
Triassic; Massachusetts, New Jersey, Connecticut.

HARPEDACTYLUS E. Hitch. Type *H. tenuissimus* E. Hitch.

Hitchcock, E. 1845 B, p. 24.
1848 A, p. 206.
1858 A, p. 112.
Hitchcock, E. 1863 B, p. 86. (No description.)
Triasic; Massachusetts.

Harpedactylus crassus E. Hitch.

Hitchcock, E. 1865 A, p. 12, pl. iii, fig. 1.
Hitchcock, C. H. 1889 B, p. 119.
Hitchcock, E. 1863 B, p. 86. (No description.)
Triassic; Massachusetts.

Harpedactylus gracilior E. Hitch.

Hitchcock, E. 1865 A, p. 12, pl. iii, fig. 2.
Hitchcock, C. H. 1889 B, p. 119.

Harpedactylus tenuissimus E. Hitch.

Hitchcock, E. 1845 B, p. 24.
Hitchcock, C. H. 1889 B, p. 119. (H. gracilis.)
Hitchcock, E. 1841 A, p. 482, pl xxxiv, fig. 13. (Sauroidichnites.)
1848 A, p. 206, pl. xiv, fig. 2. (H. gracilis.)
1858 A, p. 112, pl. xx, fig. 4; pl. lii, fig. 5. (H. gracilis.)
Triassic; Massachusetts.

HELCURA E. Hitch. Type *H. littoralis* E. Hitch.

Hitchcock, E. 1848 A, p. 244.
1858 A, p. 141.

Helcura anguinea E. Hitch.

Hitchcock, E. 1858 A, p. 141, pl. xxxvi, fig. 9.
Triassic; Massachusetts.

Helcura littoralis E. Hitch.

Hitchcock, E. 1848 A, p. 244, pl. xv, fig. 1; pl. xxiii, fig. 3.
Hitchcock, C. H. 1889 B, p. 119. (H. caudata.)
Hitchcock, E. 1858 A, p. 140, pl. xxxvii, fig. 8; pl. xl, fig. 1. (H. caudata.)
Triassic; Massachusetts.

Helcura surgens E. Hitch.

Hitchcock, E. 1858 A, p. 141, pl. xxxvi, fig. 10.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

HOPLICHNUS E. Hitch. Type *H. quadrupedans* E. Hitch.

Hitchcock, E. 1848 A, p. 230.
1858 A, p. 134.

It is doubtful whether or not this genus of footmarks was produced by a vertebrate animal.

Hoplichnus equus E. Hitch.

Hitchcock, E. 1858 A, p. 134, pl. xxiv, figs. 3-5.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts, Connecticut?

Hoplichnus quadrupedans E. Hitch.

Hitchcock, E. 1848 A, p. 230, pl. xvi, figs. 7, 8; pl. xxii, fig. 3.
Hitchcock, C. H. 1889, B, p. 119. (H. poledrus.)
Hitchcock, E. 1858 A, p. 136, pl. xxiv, figs. 6, 7; pl. xlviii, fig. 9. (H. poledrus.)
Triassic; Massachusetts.

HYLOPUS Dawson. Type *H. logani* Dawson.

Dawson, J. W. 1894 A, p. 260.
1895 A, p. 77.

Hylopus caudifer Dawson.

Dawson, J. W. 1895 A, p. 78.
Coal-measures; Nova Scotia.

Hylopus hardingi Dawson.

Dawson, J. W. 1895 A, p. 78.
Subcarboniferous; Nova Scotia.

Hylopus logani Dawson.

Dawson, J. W. 1894 A, p. 260, figure.
1895 A, p. 78.
Subcarboniferous; Nova Scotia.

Hylopus minor Dawson.

Dawson, J. W. 1895 A, p. 78.
Coal-measures; Nova Scotia.

Hylopus? trifidus Dawson.

Dawson, J. W. 1895 A, p. 78.
Coal-measures; Nova Scotia.

Hylopus sp. indet.

Dawson, J. W. 1895 A, p. 78.
Coal-measures; Nova Scotia.

HYPHEPUS E. Hitch. Type *H. fieldi* E. Hitch.

Hitchcock, E. 1858 A, pp. 97, 180.

Hyphepus fieldi E. Hitch.

Hitchcock, E. 1858 A, pp. 97, 189, pl. xvii, fig. 2; pl. xxxv, fig. 11; pl. xli, fig. 2; pl. xlii, fig. 2.
Hitchcock, C. H. 1889 B, p. 118.
Triassic; Massachusetts.

ISOCAMPE E. Hitch. Type *I. strata* E. Hitch.

Hitchcock, E. 1858 A, p. 119.

Isocampe strata E. Hitch.

Hitchcock, E. 1858 A, p. 120, pl. xx, fig. 5; pl. xxxvi, fig. 5.
Hitchcock, C. H. 1889 B, p. 118.
Triassic; Connecticut, Massachusetts.

LANGUNCULAPES E. Hitch. Type *L. latus* E. Hitch.

Hitchcock, E. 1858 A, p. 132.

Langunculapes latus E. Hitch.

Hitchcock, E. 1858 A, p. 132, pl. xxiv, fig. 1; pl. xlv, fig. 4.
Hitchcock, C. H. 1889, B, p. 119.
Triassic; Massachusetts.

LEPTONYX E. Hitch. Type *L. lateralis* E. Hitch.

Hitchcock, E. 1865 A, p. 8.

Leptonyx lateralis E. Hitch.

Hitchcock, E. 1865 A, p. 8, pl. v, fig. 3.
Hitchcock, C. H. 1889 B, p. 118.
Triassic; Massachusetts.

LIMNOPUS Marsh. Type *L. vagus* Marsh.

Marsh, O. C. 1894 D, p. 82.

Limnopus vagus Marsh.

Marsh, O. C. 1894 D, p. 82, pl. ii, fig. 2; pl. iii, fig. 2.
Dana, J. D. 1896 A, p. 684, fig. 1114.
Marsh, O. C. 1894 I, pl. xi, fig. 2.
1895 D, p. 492, fig. 9.
Miller, S. A. 1897 A, p. 793.
Coal-measures; Kansas.

NANOPUS Marsh. Type *N. caudatus* Marsh.

Marsh, O. C. 1894 D, p. 82.

Nanopus caudatus Marsh.

Marsh, O. C. 1894 D, p. 82, pl. ii, fig. 1; pl. iii, fig. 1.
Dana, J. D. 1896 A, p. 684, fig. 1113. (Nasopus.)
Marsh, O. C. 1894 I, pl. xi, fig. 1.
1895 D, p. 492, fig. 8.
Miller, S. A. 1897, A, p. 793.
Coal-measures; Kansas.

NOTALACERTA Butts. Type *N. missouriensis* Butts.

Butts, E. 1891 A, p. 18.

Notalacerta missouriensis Butts.

Butts, E. 1891 A, p. 18, fig. 2.
Coal-measures; Missouri.

NOTAMPHIBIA Butts. Type *N. magna* Butts.

Butts, E. 1891 B, p. 44.

Notamphibia magna Butts.

Butts, E. 1891 B, p. 44.
Coal-measures; Missouri.

ORTHODACTYLUS E. Hitch. Type *O. floriferus* E. Hitch.

Hitchcock, E. 1858 A, p. 113.

Orthodactylus floriferus E. Hitch.

Hitchcock, E. 1858 A, p. 114, pl. xx, fig. 7.
Deane, J. 1861 A, p. 44, pl. xxiii.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

Orthodactylus introvergens E. Hitch.

Hitchcock, E. 1858 A, p. 114, pl. xx, fig. 8; pl. li, fig. 1.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

Orthodactylus linearis E. Hitch.

Hitchcock, E. 1858 A, p. 115, pl. xx, fig. 9; pl. xlviii, fig. 4.
Deane, J. 1861 A, p. 57, pl. xxxviii, fig. 2.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

OTOZOUM E. Hitch. Type *E. moodii* E. Hitch.

Hitchcock, E. 1847 A, p. 54.
Field, R. 1860 B, p. 339.
Hitchcock, C. H. 1878 A, p. 485.
1889 B.
Hitchcock, E. 1848 A, p. 214.
1858 A, p. 123.
Owen, R. 1860 E, p. 165.
Quenstedt, F. A. 1852 A, p. 157.
Warren, J. C. 1854 A, p. 32.

Otozoum caudatum C. H. Hitch.

Hitchcock, C. H. 1871 A, p. xx.
1889 B, pp. 119, 127.
Triassic; Connecticut.

Otozoum moodii E. Hitch.

Hitchcock, E. 1847 A, p. 55, fig. 1.
Dana, J. D. 1896 A, p. 752, fig. 1176.
Deane, J. 1861 A, p. 55. pl. xxxvii.
Hitchcock, C. H. 1871 A, p. xxi.
1889 B, pp. 119, 127.
Hitchcock, E. 1848 A, p. 214, pl. xii, fig. 1.
1858 A, p. 123, pl. xxii; pl. xxiii, fig. 1; pl. xxxiii, figs. 4, 5; pl. xlvi, fig. 5.
1861 A, p. 148, fig. 2.
Triassic; Massachusetts, Connecticut.

Otozoum parvum C. H. Hitch.

Hitchcock, C. H. 1889 B, pp. 119, 122, 127.
Triassic; New Jersey, Pennsylvania.

PALÆOSAUROPUS nom. nov. Type *Sauropus primævus* Lea.

Dawson, J. W. 1868 A, p. 357. (Sauropus.)
    1895 A, p. 77. (Sauropus.)
Lea, I. 1849 A, p. 91. (Sauropus; preoccupied by E. Hitchcock, 1845.)
Lesley, J. P., 1890 A, p. 728, figures. (Sauropus.)
Miller, S. A. 1889 A, p. 625. (Sauropus.)
Owen, R. 1860 E, p. 167. (Sauropus.)
Zittel, K. A. 1890 A, p. 411. (Sauropus.)
    Coal-measures; Pennsylvania.

Palæosauropus antiquior (Dawson).

Dawson, J. W. 1882 A, p. 652. Sauropus.)
    1895 A, p. 77. (Sauropus.)
    Subcarboniferous; Nova Scotia.

Palæosauropus primævus (Lea).

Lea, I. 1849 A, p. 91, figure. (Sauropus.)
Cope, E. D. 1871 C, p. 241. (Sauropus.)
Dana, J. D. 1896 A, p. 645, fig. 1023. (Sauropus,)
Lea, I. 1850 A. (Sauropus.)
    1852 A, p. 307, pls. xxxi, xxxii. (Sauropus.)
    1855 A. (Sauropus.)
Miller, S. A. 1889 A, p. 625, fig. 1193. (Sauropus.)
Silliman, B. 1852 B. (Sauropus.)

Palæosauropus sydenensis (Dawson).

Dawson, J. W. 1863 E, p. 431, fig. 1. (Sauropus.)
    1868 A, p. 358, fig. 140. (Sauropus.)
    1876 A, p. 441. (Sauropus.)
    1878 A, p. 358, fig. 140; suppl., p. 63. (Sauropus.)
    1895 A, p. 77. (Sauropus.)
Lesley, J. P. 1890 A, p. 920, figure. (Sauropus.)
    Coal-measures; Cape Breton Island.

Palæosauropus unguifer (Dawson).

Dawson, J. W. 1872 A, p. 251, figure. (Sauropus.)
    1876 A, p. 441. (Sauropus.)
    1878 A, suppl., p. 64. (Sauropus.)
    1882 A, p. 652. (Sauropus.)
    1894 A, p. 267. (Sauropus.)
    1895 A, p. 77. (Sauropus.)
    Carboniferous (Millstone Grit); Nova Scotia.

PALAMOPUS E. Hitch. Type *P. anomalus* E. Hitch.

Hitchcock, E, 1845 B, p. 24.
    1845 B, p. 24. (Sillimanius, in part.)
    1848 A, p. 233. (Macropterna.)
    1858 A, p. 128. (Macropterna.)
Lydekker, R. 1890 A, p. 219. (Macropterna.)

This is not the *Palamopus* E. Hitch. of 1848 and subsequently. The latter is here replaced by *Eupalamopus*. Since E. Hitchcock's *Macropterna recta* (=*P. anomalus*) belongs here, it becomes necessary to refer here also the other species of *Macropterna*.

Palamopus anomalus E. Hitch.

Hitchcock, E. 1845 B, p. 24.
Amer. Jour. Science 1847 B, p. 276.
Deane, J. 1847 A, p. 79, fig. 4. (Sauroidichnites palmatus.)
    1847 B. (Sauroidichnites palmatus.)
Hitchcock, E. 1836 A, p. 324, fig. 15. (Ornithichnites palmatus.)
    1837 B, p. 175. (Sauroidichnites palmatus.)
    1841 A, p. 483, pl. xxxiv, fig. 15. (Sauroidichnites palmatus.)
    1848 A, p. 235, pl. xv, fig. 6. (Macropterna recta.)
    Triassic; Massachusetts.

Palamopus divaricans (E. Hitch.).

Hitchcock, E. 1848 A, p. 237, pl. xv, fig. 7. (Macropterna.)
Dana, J. D. 1896 A, p. 752, fig. 1178. (Macropterna.)
Deane, J. 1861 A, p. 45, pl. xxiv, fig. 1. (Macropterna.)
Hitchcock, C. H. 1889 B, p. 119. (Macropterna.)
Hitchcock, E. 1841 A, p. 483 (part), pl. xxxiv, fig. 16. (Sauroidichnites palmatus.)
    1858 A, p. 129, pl. xxiii, fig. 7. (Macropterna.)
Lydekker, R. 1890 A, p, 219. (Macropterna.)
    Triassic; Massachusetts.

Palamopus gracilipes (E. Hitch.).

Hitchcock, E. 1858 A, p. 129, pl. xxiii, fig. 6; pl. xxxiv, fig. 1. (Macropterna.)
?Deane, J. 1861 A, p. 47, pl. xxix, fig. 1. (Macropterna.)
Hitchcock, C. H. 1889 B, p. 119. (Macropterna.)
    Triassic; Massachusetts.

Palamopus rogersianus (E. Hitch.).

Hitchcock, E. 1845 B, p. 24. (Sillimanius rogersianus; Argoides minimus.)
Deane, J. 1861 A, p. 47, pl. xxviii, fig. 2. (Macropterna vulgaris.)
Hitchcock, C. H. 1889 B, p. 119. (Macropterna vulgaris.)
Hitchcock, E. 1841 A, p. 497 (in part), pl. xlii, fig. 30. (Ornithoidichnites minimus, not of 1836, 1837.)
    1843 A, p. 256, pl. xi, fig. 7. (Ornithoidichnites rogersi.)
    1848 A, p. 187, pl. vi, fig. 6 (Argozoum minimum); p. 233, pl. xv. fig. 9 (Macropterna rhynchosauroidea).
    1858 A, p. 128, pl. xxiii, fig. 5; pl. xxxv, fig. 9; pl. xxxvii, fig. 4; pl. xlviii, fig. 7; pl. xlix, fig. 6. (M. vulgaris.)
    Triassic; Massachusetts, Connecticut.

PLATYPTERNA E. Hitch. Type, none given; *P. deaniana* may be taken.

Hitchcock, E. 1845 B, p. 25.
Edwards, A. Milne 1868 A, p. 136.
1869 A, p. 672.
Hitchcock, E. 1845 B, p. 25. (Calopus, type *C. delicatulus.*)
1848 A, p. 188.
1858 A, p. 83.
Warren, J. C. 1854 A, p. 29.

Platypterna concamerata (E. Hitch.).

Hitchcock, E. 1848 A, p. 207, pl. xiv, fig. 3. (Harpedactylus.)
Hitchcock, C. H. 1889 B, p. 118. (P. varica.)
Hitchcock, E. 1858 A, p. 85, pl. xiv, fig. 8; pl. xlvii, fig. 4. (P. varica.)
Triassic; Massachusetts.

Platypterna deaniana E. Hitch.

Hitchcock, E. 1845 B, p. 25.
Hitchcock, C. H. 1889 B, p. 118.
Hitchcock, E. 1841 A, p. 493, pl. xlii, figs. 31, 32. (Ornithoidichnites deanii.)
1848 A, p. 189, pl. vii, fig. 1.
1858 A, p. 83, pl. xiv, fig. 4.
1863 B, p. 85.
1865 A, p. 2.
Triassic; Connecticut.

Platypterna delicatula E. Hitch.

Hitchcock, E. 1845 B, p. 25. (Calopus.)
Hitchcock, C. H. 1889 B, p. 118.
Hitchcock, E. 1841 A, p. 497, pl. xlv, fig. 40. (Ornithoidichnites.)
Hitchcock, E. 1848 A, p. 190, pl. vii, fig. 4.
1858 A, p. 84, pl. xiv, fig. 6; pl. lviii, fig. 8.
Triassic; Connecticut.

Platypterna digitigrada E. Hitch.

Hitchcock, E. 1858 A, p. 86, pl. xiv, fig. 9; pl. li, fig. 2.
Hitchcock, C. H. 1889 B, p. 118.
Triassic; Massachusetts.

Platypterna gracillima E. Hitch.

Hitchcock, E. 1858 A, p. 86, pl. xiv, fig. 12.
1865 A, p. 2.
Triassic; Massachusetts.

This species was rejected in the publication last quoted; but no statement is made as to what species the specimens are to be referred.

Platypterna recta E. Hitch.

Hitchcock, E. 1848 A, p. 209, pl. v, fig. 5. (Harpedactylus.)
Hitchcock, C. H. 1889 B, p. 118.
Hitchcock, E. 1858 A, p. 84, pl. xiv, fig. 7; pl. xlvii, fig. 3.
Triassic; Massachusetts.

Platypterna tenuis E. Hitch.

Hitchcock, E. 1845 B, p. 25.
Hitchcock, C. H. 1889 B, p. 118.
Hitchcock, E. 1841 A, p. 494, pl. xliii, figs. 33, 34. (Ornithoidichnites.)
1848 A, p. 189, pl. vii, figs. 2, 3.
1858 A, p. 84, pl. xiv, fig. 5; pl. lviii, fig. 10.
Triassic; Connecticut.

PLECTROPTERNA E. Hitch. Type *Plectropus minitans* E. Hitch.

Hitchcock, E. 1858 A, p. 108. (For Plectropus, preoccupied.)
1845 B, p. 24. (Plectropus.)
1848 A, p. 198. (Plectropus.)

Plectropterna angusta E. Hitch.

Hitchcock, E. 1858 A, p. 110, pl. xviii, fig. 4; pl. xxxvi, fig. 3.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

Plectropterna elegans E. Hitch.

Hitchcock, C. H. 1889 B, pp. 122, 125.
Triassic; Connecticut.

Plectropterna gracilis E. Hitch.

Hitchcock, E. 1858 A, p. 109, pl. xviii, fig. 3; pl. xlviii, fig. 2.
Hitchcock, C. H. 1889 B, p. 119.
Hitchcock, E. 1865 A, p. 24.
Triassic; Massachusetts, Connecticut.

Plectropterna lineans E. Hitch.

Hitchcock, E. 1858 A, p. 110, pl. xviii, fig. 5; pl. xxxv, fig. 10.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Connecticut.

Plectropterna minitans E. Hitch.

Hitchcock, E. 1845 B, p. 24. (Plectropus.)
Hitchcock, C. H. 1889 B, p. 119.
Hitchcock, E. 1841 A, p. 481, pl. xxxiii, fig. 11; pl. xlviii, fig. 47 (Sauroidichnites minitans); p. 482, pl. xxxiii, fig. 12; pl. xlviii, fig. 48 (S. longipes).
1844 A, p. 304. (Sauroidichnites.)
1845 B, p. 24. (Plectropus longipes.)
1848 A, p. 198, pl. ix, figs. 2, 3 (Plectropus minitans); p. 199, pl. viii, fig. 4; pl. x, figs. 1–3 (Plectropus longipes).
1858 A, p. 108, pl. xviii, fig. 2; pl. xix, figs, 10–12.
Triassic; Connecticut, Massachusetts.

PLESIORNIS E. Hitch. No type assigned.

Hitchcock, E. 1858 A, p. 102.
1861 A, p. 150.
1865 A, p. 35.

Plesiornis giganteus C. H. Hitch.

Hitchcock, C. H. 1889 B, pp. 118, 122, 126.
Triassic; Connecticut.

Plesiornis minimus (E. Hitch.).

Hitchcock, E. 1845 B, p. 23. (Argoides.)
Hitchcock, C. H. 1889 B, pp. 118, 122. (P. æqualipes.)
Hitchcock, E. 1841 A, p. 497 in part, pl. xlv, fig. 41. (Orinithoidichnites minimus.)
1848 A, p. 187, pl. vi, fig. 6. (Argozoum minimum.)
1858 A, p. 104, text-figure. (P. æqualipes.)
Triassic; Massachusetts, Connecticut.

Argoides minimus of 1845 was based on *Ornithoidichnites minimus* of 1841. This was a composite species, a part of which was assigned to *Palamopus rogersianus* of the present work (*Macropterna vulgaris* of E. Hitchcock.) The remaining part must bear the name given it in 1845.

Plesiornis minor (E. Hitch.).

Hitchcock, E. 1845 B, p. 23. (Fulicopus.)
Cook, G. H. 1885 A, p. 96. (Brontozoum isodactylum.)
Deane, J. 1844 A, p. 76. (Ornithichnites fulicoides.)
1861 A, p. 43, pls. xviii, xxxvii. (P. quadripes.)
Eyermann, J. 1889 A, p. 82. (B. isodactylum.)
Field, R. 1860 A. (Ornithichnites fulicoides.)
Hitchcock, C. H. 1889 B, p. 118. (P. quadripes.)
Hitchcock, E. 1843 A, p. 258, pl. xi, fig. 3. (Ornithichnites fulicoides.)
1844 A, p. 297. (Ornithichnites fulicoides.)
1848 A, p. 179, pl. iv, figs. 2, 3. (Æthyopus minor.)
1858 A, p. 69, pl. xii, fig. 3; pl. xl, fig. 1; pl. xlvi, fig. 3; pl. lvii, fig. 4 (Brontozoum isodactylum); 1 p. 102, pl. xvii, fig. 7; pl. xxxv, figs. 1, 2; pl. xlv, fig. 5 (P. quadripes).
Mantell, G. A. 1846 A. (Ornithichnites fulicoides.)
Quenstedt, F. A. 1852 A, p. 82. (Ornithichnites fulicoides.)
Warren, J. C. 1854 A, p. 28. (Æthyopus minor.)
Triassic; Massachusetts.

Either the whole or a part of this species was divided into the two new species *Brontozoum isodactylum* and *Anomœpus intermedius*, which see. The *B. isodactylum* of Cook and Eyermann may not belong here.

Plesiornis mirabilis E. Hitch.

Hitchcock, E. 1865 A, p. 35, pl. xx.
Hitchcock. C. H. 1889 B, p. 118.
Triassic; Massachusetts.

Plesiornis pilulatus E. Hitch.

Hitchcock, E. 1858 A, p. 103, pl. xvii, fig. 8; pl. xxxvi, fig. 4.
Hitchcock, C. H. 1889 B, p. 118.
Triassic; Massachusetts.

POLEMARCHUS E. Hitch. Type *Sauroidichnites polemarchius* E. Hitch = *P. gigas* E. Hitch.

Hitchcock, E. 1845 B, p. 24.
1848 A, p. 197.
1858 A. p. 107.

Polemarchus gigas E. Hitch.

Hitchcock, E. 1845 B, p. 24.
Hitchcock, C. H. 1889 B, pp. 119, 122.
Hitchcock, E. 1841 A, p. 483, pl. xxxv, fig. 17. (Sauroidichnites polemarchius.)
Hitchcock, E. 1844 A, p. 304. (Sauroidichnites polemarchius.)
1845 A, p. 63. (Sauroidichnites polemarchius.)
1848 A, p. 197, pl. ix, fig. 1.
1858 A, p. 107, pl. xviii, fig. 1; pl. lix, fig. 3.
Lesley, J. P. 1889 A, p. 729.
Triassic; Massachusetts, New Jersey, Pennsylvania.

SAUROPUS E. Hitch. Type *S. barrattii* E. Hitch. Not *Sauropus* Lea, 1849.

Hitchcock, E. 1845 B, p. 24.
Hitchcock, C. H. 1871 A, p. xxi. (Chimærichnus, for Chimæra E. Hitch., preoccupied.)
1889 B, p. 118. (Chimærichnus.)
Hitchcock, E. 1858 A, p. 118. (Chimæra.)

Sauropus barrattii E. Hitch.

Hitchcock, E. 1845 B, p. 24.
Hitchcock, C. H. 1889 B, p. 118. (Chimærichnus.)
Hitchcock. E. 1841 A, p. 477, pl. xxx, fig. 1. (Sauroidichnites.)
Hitchcock, E. 1848 A, p. 225, pl. xiv, fig. 1. (Anomœpus.)
1858 A. p. 118, pl. xxi, figs. 1–4; pl. xxxvii, fig. 1. (Chimæra.)
Triassic; Connecticut, Massachusetts.

Sauropus ingens (C. H. Hitch.).

Hitchcock, C. H. 1889 B, pp. 118, 122. (Chimærichnus.)
Triassic; New Jersey.

SELENICHNUS E. Hitch. Type *S. falcatus* E. Hitch.

Hitchcock, E. 1858 A, p. 183.

Selenichnus breviusculus E. Hitch.

Hitchcock, E. 1858 A, p. 184, pl. xxiii, fig. 9; pl. lx, fig. 7.
Deane, J. 1861 A, p. 48, pl. xxx, fig. 1.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

Selenichnus falcatus E. Hitch.

Hitchcock, E. 1858 A, p. 183, pl. xxiii, fig. 8; pl. lx, fig. 8.
Deane, J. 1861 A, p. 48, pl. xxx, fig. 2.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

SHEPARDIA E. Hitch. Type *S. palmipes* E. Hitch.

Hitchcock, E. 1858 A, p. 131.

Shepardia palmipes E. Hitch.

Hitchcock, E. 1858 A, p. 131, pl. xxiv, fig. 2.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

SILLIMANIUS E. Hitch. Type, none assigned.

Hitchcock, E. 1845 B, p. 24.
1848 A, p. 191. (Ornithopus; no type.)
1858 A, p. 87. (Ornithopus.)

Originally four species, *S. adamsanus*, *S. tetradactylus*, *S. gracilior*, and *S. rogersianus*, were assigned to this genus. The last-named belongs under *Palamopus*. Later (1848) Hitchcock referred the first three species to *Ornithopus*, a new genus. As *Sillimanius* was based on described and figured forms, *Ornithopus* becomes a synonym.

Sillimanius gracilior E. Hitch.

Hitchcock, E. 1845 B, p. 24.
Hitchcock, C. H. 1889 B, p. 118. (Ornithopus.)
Hitchcock, E. 1841 A, p. 498, pl. xlvi, fig. 43 (Ornithoidichnites).
1843 A. (Ornithoidichnites).
1848 A, p. 193, pl. viii, fig. 2. (Ornithopus.)
1858 A, p. 88, pl. xiv, fig. 11; pl. lviii, fig. 7. (Ornithopus.)
Triassic; Connecticut.

Sillimanius tetradactylus E. Hitch.

Hitchcock, E. 1845 B, p. 24.
Giebel, C. G. 1847 B, p. 36. (Ornithichnites.)
Hitchcock, C. H. 1889 B, p. 118. (Ornithopus gallinaceus.)
Hitchcock, E. 1836 A, p. 323. (Ornithichnites.)
1837 A, p. 175. (Ornithichnites.)
1841 A, p. 497, pl. xlvi, fig. 42. (Ornithoidichnites.
1848 A, p. 192, pl. viii, fig. 1. (Ornithopus gallinaceus.)
1858 A, p. 87, pl. xiv, fig. 10; pl. lviii, fig. 1. (Ornithopus gallinaceus.)
Pictet, F. J. 1853 A, p. 407. (Ornithichnites.)
Quenstedt, F. A. 1852 A, p. 82. (Ornithichnites.)
Warren, J. C. 1854 A, p. 29. (Ornithopus gallinaceus.
Triassic; Massachusetts, Connecticut.

STENODACTYLUS E. Hitch. Type *S. curvatus* E. Hitch.

Hitchcock, E. 1858 A, p. 116.

Stenodactylus curvatus E. Hitch.

Hitchcock, E. 1858 A, p. 116, pl. xx, fig. 11; pl. xxiv, fig. 3.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

STEROPOIDES E. Hitch. Type not indicated.

Hitchcock, E. 1845 B, p. 24.
Edwards, A. Milne 1863 A, p. 136. (Tridentipes.)
1869 A, p. 672. (Tridentipes.)
Hitchcock, E. 1848 A, p. 182. (Steropezoum.)
1858 A, p. 88, (Tridentipes, to replace Steropezoum.)
Lydekker, R. 1890 A, p. 222. (Tridentipes.)

Steropoides elegans E. Hitch.

Hitchcock, E. 1845 B, p. 24. (S. elegans, S. elegantior.)
Giebel, C. G. 1847 B, p. 36. (Ornithichnites.)
Hitchcock, C. H. 1889 B, p. 118. (Tridentipes.)
Hitchcock, E. 1836 A, p. 320. (Ornithichnites diversus); p. 321 (O. diversus platydactylus).
1841 A, p. 491, pl. xli, fig. 28, 29; pl. xlviii, figs. 57-62 (Ornithoidichnites elegans); pl. 493, pl. xlii, fig. 30; pl. xlviii, fig. 58 (O. elegantior).
1848 A, p. 183, pl. v, fig. 2 (Steropezoum elegans); p. 184, pl. v, fig. 3 (S. elegantius).
1858 A, p. 90, pl. xv, fig. 2; pl. xlv, fig. 6; pl. lii, figs. 8, 11. (Tridentipes.)
Pictet, F. J. 1853 A, p. 406. (Ornithichnites diversus.)
Triassic; Massachusetts.

Steropoides infelix nom. nov.

Hitchcock, C. H. 1889 B, p. 118. (Tridentipes elegantior.)
Hitchcock, E. 1853 A, p. 90, pl. xv, fig. 8; pl. xlv, fig. 1. (Tridentipes elegantior, not Steropezoum elegantius, 1848.)
Triassic; Massachusetts.

Steropoides ingens E. Hitch.

Hitchcock, E. 1845 B, p. 24. (S. ingens, Sillimanius adamsanus.)
Cook, G. H. 1885 A, p. 96. (Tridentipes.)
Giebel, C. G. 1847 B, p. 35 (Ornithichnites ingens); p. 36 (O. danæ.)
Hitchcock, C. H. 1889 B, pp. 118, 122. (Tridentipes.)
Hitchcock, E. 1836 A, p. 319. (Ornithichnites.)
1841 A, p. 490, pl. xl, fig. 37. (Ornithoidichnites.)
1844 A, p. 306, pl. iii, fig. 5. (O. danæ.)
1848 A, p. 182, pl. v, fig. 1 (Steropezoum ingens); p. 191, pl. vii, fig. 5 (Ornithopus adamsanus).
1858 A, p. 89, pl. xv, fig. 1. (Tridentipes.)
Lesley, J. P. 1890 A, p. 1211, figure. (Tridentipes.)
Pictet, F. J. 1853 A, p. 406. (Ornithichnites.)
Quenstedt, F. A. 1852 A, p. 82. (Ornithichnites.)
Triassic; Massachusetts, New Jersey.

Steropoides loripes (E. Hitch.).

Hitchcock, E. 1848 A, p. 193, pl. vii, fig. 3. (Ornithopus.)
Hitchcock, C. H. 1889 B, p. 118. (Tridentipes insignis.)
Hitchcock, E. 1841 A, p. 495, pl. xliv, figs. 36, 37; pl. xlviii, fig. 63. (Ornithoidichnites divaricatus.)
1858 A, p. 91, pl. xv, fig. 4; pl. xlv, fig. 3; pl. xlvii, fig. 2. (Tridentipes insignis.)
Lesley, J. P. 1890 A, p. 1211, figure. (Tridentipes.)
Triassic; Massachusetts.

Steropoides uncus (E. Hitch.).

Hitchcock, E. 1858 A, p. 91, pl. xv, fig. 5; pl. xlvi, fig. 1. (Tridentipes.)
Hitchcock, C. H. 1889 B, p. 118. (Tridentipes uncus?)
1863 B, p. 85. (T. uncus, doubtful species.)
Hitchcock, E. 1865 A, p. 20. (Tridentipes.)
Triassic; Massachusetts.

TARSODACTYLUS E. Hitch. Type *T. caudatus* E. Hitch.

Hitchcock, E. 1858 A, p. 98.

Tarsodactylus caudatus E. Hitch.

Hitchcock E. 1858 A, p. 99.
Deane, J. 1861 A, p. 54, pl. xxxv.
Hitchcock, C. H. 1889 B, p. 118.
Triassic; Massachusetts.

Tarsodactylus expansus C H. Hitch.

Hichcock, C. H. 1866 A, p. 301.
1889 B, p. 118.
Triassic; Massachusetts.

THENAROPUS King. Type not named; *T. leptodactylus* may be assumed.

King, A. T. 1844 A, p. 177.
Amer. Jour. Science 1845 C. (Spheropezium.)
Hitchcock, E. 1848 A, p. 218.
King, A. T. 1845 A, p. 343. (Spheropezopus.)
1845 C. (Spheropezium.)
Lyell, C. 1846 A, p. 25. (No name.)
Miller, S. A. 1889 A, p. 626. (Sphæropezium, Thenaropus.)
Zittel, K. A. 1890 B, p. 411.

The tracks assigned to this genus are regarded by Lyell as being artifacts.

Thenaropus leptodactylus King.

King, A. T. 1844 A, p. 177, fig. 3.
Amer. Jour. Science 1845 C, p. 345. (Spheropezium.)
King, A. T. 1845 A, p. 345, fig. 3. (Spheropezopus.)
1845 C, p. 216, fig. 2. (Spheropezium.)
Coal-measures; Pennsylvania.

Thenaropus ovoidactylus King.

King, A. T. 1844 A, p. 178, fig. 7.
Amer. Jour. Science 1845 C, p. 347. (Spheropezium.)
King, A. T. 1845 A, p. 347, fig. 6. (Spheropezopus.)
Coal-measures; Pennsylvania.

Thenaropus pachydactylus King.

King, A. T. 1844 A, p. 177, fig. 4.
Amer. Jour. Science 1845 C, p. 346. (Spheropezium.)
King, A. T. 1845 A, p. 346, fig. 4. (Spheropezopus.)
1845 C, p. 216, fig. 1. (Spheropezium.)
Coal-measures; Pennsylvania.

Thenaropus sphærodactylus King.

King, A. T. 1844 A, p. 177, figs. 5, 6.
Amer. Jour. Science 1845 C, p. 346. (Spheropezium thærodactylum.)
King, A. T. 1845 A, p. 346, figs. 5*a*, 5*b*. (Spheropezopus thærodactylum.)
1845 C, fig. 3. (Spheropezium thærodactylum.)
Coal-measures; Pennsylvania.

THINOPUS Marsh. Type *T. antiquus* Marsh.

Marsh, O. C. 1896 G. p. 374.

Thinopus antiquus Marsh.

Marsh, O. C. 1896 G, p. 374, figure.
Devonian; Pennsylvania.

TOXICHNUS E. Hitch. Type *T. inæqualis* E. Hitch.

Hitchcock E. 1865 A, p. 12.

Toxichnus inæqualis E. Hitch.

Hitchcock, E. 1865 A, p. 12, pl. v, fig. 5.

Hitchcock, E. 1889 B, p. 119.
Triassic; Massachusetts.

TRIÆNOPUS E. Hitch. Type *T. baileyanus* E. Hitch.

Hitchcock, E. 1845 B, p. 24.
1848 A, p. 202.
1858 A, p. 111.
Warren, J. C. 1854 A, p. 30.

Triænopus baileyanus E. Hitch.

Hitchcock, E. 1845 B, p. 24. (T. baileyanus, T. emmonsianus.)
Hitchcock, C. H. 1889 B, pp. 119, 122. (T. leptodactylus.)
Hitchcock, E. 1841 A, p. 479, pl. xxx, figs. 4–6. (Sauroidichnites emmonsii); p. 480, pl. xxxii, figs. 8, 9 (S. baileyi).
Hitchcock, E. 1848 A, p. 203, pl. x, fig. 4 (T. baileyanus); p. 204, pl. x, fig. 5 (T. emmonsianus).
1858 A, p. 111, pl. xix, figs. 1–9; pl. xx, figs. 1–3; pl. xlv, fig. 8; pl. lii, fig. 1. (T. leptodactylus.)
Warren, J. C. 1854 A, p. 31. (T. baileyanus, T. emmonsianus.)
Triassic; Connecticut.

TRIHAMUS E. Hitch. Type *T. elegans* E. Hitch.

Hitchcock, E. 1865 A, p. 9.
Triassic; Massachusetts.

Trihamus elegans E. Hitch.

Hitchcock, E. 1865 A, p. 9, pl. ii, fig. 3.
Hitchcock, C. H. 1889 B, p. 118.
Hitchcock, E. 1863 B, p. 86. (No description.)
Triassic; Connecticut.

Trihamus magnus C. H. Hitch.

Hitchcock, C. H. 1889 B, pp. 118, 126.
Triassic; Connecticut.

TYPOPUS E. Hitch. Type *T. abnormis* E. Hitch.

Hitchcock, E. 1845 B, p. 25.
1848 A, p. 212.
1858 A, p. 105.

Typopus abnormis E. Hitch.

Hitchcock, E. 1845 B, p. 25.
Hitchcock, C. H. 1889 B, p. 119, 122.
Hitchcock, E. 1844 A, pp. 294, 307, pl. iii, figs. 6–8. (Sauroidichnites.)
Hitchcock, E. 1848 A, p. 212, pl. x, fig. 6.
1858 A, p. 105, pl. xvii, fig. 9; pl. xlv. fig. 7.
Triassic: Massachusetts, Connecticut.

Typopus gracilis E. Hitch.

Hitchcock, E. 1858 A, p. 106, pl. xvii, fig. 10.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Connecticut.

XIPHOPEZA E. Hitch. Type *X. triplex* E. Hitch.

Hitchcock, E. 1848 A, p. 239.
1858 A, p. 113.

Xiphopeza triplex E. Hitch.

Hitchcock, E. 1858 A, p. 113, pl. xx, fig. 6; pl. lii, figs. 3, 4, 6.
Deane, J. 1861 A, p. 45, pl. xxiv, fig. 2.
Hitchcock, C. H. 1889 B, p. 119.
Triassic; Massachusetts.

Class MAMMALIA Linn.

Linnaeus, C., 1858, Syst. Nat., ed. 10, i, p. 14.
Albrecht, P. 1886 A.
Allen, H. 1882 A.
Ameghino, F. 1891 D, p. 282.
1896 A.
1898 B.
1899 A, p. 555.
Baird, S. F. 1857 A.
Baur, G. 1884 C.
1884 D.
1885 G.
1885 H.
Baur, G. 1886 A.
1886 B.
1889 D.
1891 C, p. 354.
1892 D, p. 210.
1894 A.
Baur and Case 1897 A.
Bemmelen, J. F. 1899 A, p. 162.
Branco, W. 1897 A.
Cope, E. D. 1871 B, p. 196.
1873 E, p. 645.
1874 M.

Cope, E. D. 1880 B, p. 58.
1881 J.
1882 A.
1883 M, p. 562.
1884 E.
1884 I, p. 43.
1884 K, p. 323.
1884 L, p. 324.
1884 O, p. 166.
1884 FF.
1884 HH.
1884 II.
1885 A.
1885 G.
1887 S, pp. 241, 317, 341.
1889 C.
1889 R.
1891 N, p. 64.
1893 M.
1898 B, p. 101.
Dawkins, W. B. 1870 A.
1880 A.
Dobson, G. E. 1885 A.
Fleischman, A. 1891 A.
Flower, W. H. 1869 A.
1876 B.
1876 C.
1883 A.
1883 D.
1885 A.
Flower and Lydekker 1891 A.
Frenkel, F. 1873 A.
Fürbringer, M. 1885 B.
Gadow, H. 1889 A, p. 474.
1896 A, p. 42.
1898 A, p. 39.
Gaupp, E. 1894 A.
Gegenbaur, C. 1864 A.
1865 B.
1898 A.
Gill, T. 1871 A.
1872 A.
Goodrich, E. S. 1894 E.
Haacke, W. 1888 A, p. 8.
1893 A, p. 719.
Haeckel, E. 1895 A, p. 419
Hallmann, E. 1837 A.
Hoffmann, C. K. 1879 A, p. 31.
Howes, G. B. 1887 B.
1893 A.
1896 A.
Humphrey, G. M. 1866 A.
Humphreys, J. 1889 A, p. 137.
Huxley, T. H. 1870 A.
1872 A, p. 273.
1876 B, xiv, p. 33.
1880 B.
Kehner, F. A. 1876 A.
Kehrer, G. 1886 A, p. 83.
Kingsley and Ruddick 1900 A, p. 219.
Köstlin, O. 1844 A.
Kollmann, J. 1888 A.
Kükenthal, W. 1890 C.
1892 A.
1892 B.
1895 B.
Landois, — 1881 A, p. 125.
Lataste, F. 1889 A.
Lebouoq, H. 1896 A.
Leche, W. 1893 A.
1893 B.
1895 A.
1896 A.
1896 B.
Lemoine 1893 A.
Lydekker, R. 1885 B.
1885 C.
1886 A.
1886 B.
1887 A.
Maggi, L. 1898 B.
1898 C.
1898 D.
Marsh, O. C. 1877 E.
1885 C.
1887 A.
1891 H.
1898 B.
Mehnert, E. 1889 A.
Nicholson and Lydekker 1889 A, p. 1245.
Osborn, H. F. 1887 D.
1888 E.
1888 F.
1892 E.
1892 I.
1893 A.
1893 D.
1893 G.
1897 C.
1898 A.
1898 B.
1898 L.
1898 O, p. 175.
1898 R, p. 309.
1900 J, p. 943.
Owen, R. 1843 A.
1845 B, p. 296.
1851 C.
1858 A.
1868 A.
Parker, W. K. 1868 A, p. 192.
1874 B.
1879 B.
1885 A.
1886 A.
Parsons, F. G. 1899 A.
1900 A.
Pollard, E. C. 1893 A
Reh, L. 1895 A.
Römer, F. 1898 A.
Röse, C. 1892 A.
1892 D.
1892 E.
1893 C.
1895 A.
1896 A.
Roger, O. 1889 A.
1896 A.
Rütimeyer, L. 1877 A.
1888 A.
1891 A.
1892 A.
Schlosser, M. 1888 A.
1889 A.

Schlosser, M. 1890 A.
1890 C.
1890 D.
1892 A.
1893 A.
Schmidt, O. 1886 A.
Schwalbe, G. 1894 A.
Scott, W. B. 1891 B, p. 378.
1891 C.
1892 A.
1892 C.
1899 B, p. 92.
Seeley, H. G. 1888 D, p. 106.
1888 E.
1888 H.
1898 A, p. 357.
Slade, D. D. 1888 A.
Smith, J. 1895 A.
Steinmann and Döderlein 1890 A, p. 678.
Thilenius, G. 1894 A.
Thomas, O. 1888 A.
Thomas, O. 1890 A.
1892 B.
Thompson, J. A. 1897 A, p. 41.
Tomes, C. S. 1898 A, p. 299.
Tornier, G. 1886 A.
1888 A.
1890 A.
Trouessart, E. L. 1889 A.
1898 A.
1899 A.
Turner, H. N. 1848 A.
Weber, Max 1887 A.
1893 A.
1893 B.
Weyhe, — 1875 A.
Woodward, A. S. 1898 B, p. 245.
Woodward, M. F. 1892 A.
1893 A.
1896 A.
Zittel, K. A. 1893 A.
1893 B.

Subclass PROTOTHERIA Gill.

Gill, T. 1872 B, p. vi (Prototheria); pp. 27, 46 (Ornithodelphia).
Cope, E. D. 1887 Q.
1889 R, pp. 873, 874.
1891 N, p. 377.
1898 B, p. 102.
Flower, W. H. 1883 A.
1883 D, p. 377.
1885 A. (Ornithodelphia.)
Flower and Lydekker 1889 A, p. 117.
Gadow, H. 1898 A, p. 39.
Gill, T. 1888 A.
Haeckel, E. 1896 A, p. 468. (Monotrema in part.)
Huxley, T.H. 1872 A, p. 274. (Ornithodelphia.)
1880 B.
Osborn, H. F. 1893 A, p. 391.
1899 B, p. 92.
Parker, W. K. 1885 A, p. 25.
Steinmann and Döderlein 1890 A, p. 696.
Tomes, C. S. 1898 A, p. 300.
Wilson and Hill 1897 A, p. 429.
Woodward, A. S. 1898 B, p. 248.
Zittel, K. A. 1893 B, p. 61. (Eplacentalia.)

Order PROTODONTA Osborn.

Osborn, H. F. 1887 E.
Cope, E. D. 1889 R, p. 874.
1891 N, pp. 64, 66.
1898 B, p. 102.
Gadow, H. 1898 A, p. 40.
Haeckel, E. 1896 A, p. 470. (Dromatheridæ.)
Hay, O. P. 1899 F, p. 682.
Osborn, H. F. 1888 G, p. 222.
Zittel, K. A. 1893 B, p. 96.

DROMATHERIIDÆ.

Gill, T. 1872 B, p. 27.
Cope, E. D. 1889 R, p. 874.
1898 B, p. 102.
Marsh, O. C. 1887 A, p. 344.
Nicholson and Lydekker 1889 A, p. 1272.
Osborn, H. F. 1887 F, p. 291.
1888 G, p. 222.
Steinmann and Döderlein 1890 A, p. 697.

DROMATHERIUM Emmons. Type *D. sylvestre* Emmons.

Emmons, E. 1857 A, p. 93.
Ameghino, F, 1896 A.
Emmons, E. 1858 A, p. 78. (No description.)
1860 A, p. 175.
Flower and Lydekker 1891 A, p. 113.
Goodrich, E. S. 1894 A, p. 426.
Leidy, J. 1857 B, p. 150.
1869 A, p. 410.
1870 F.
Lydekker, R. 1887 A, p. 269.
Marsh, O. C. 1891 I, p. 237.
Nicholson and Lydekker 1889 A, p. 1272.
Osborn H. F. 1886 B.
1887 D.
1887 E.
1887 F, p. 291.
1888 B.
1888 F, p. 1067.
1888 G, pp. 222, 289.
1891 C, p. 776.
1892 I.
1893 D.
1895 C. p. 6.
Owen, R. 1860 E, p. 302

Schlosser, M. 1890 C, 242, fig. I, 1.
Scott, W. B. 1892 A, p. 405.
Winge, H. 1893 C, p. 75.
Woodward, A. S. 1898 B, p. 256.
Zittel, K. A. 1890 B, p. 96.

Authors previously to 1886 included *Microconodon* in this genus.

Dromatherium sylvestre Emmons.

Emmons, E. 1857 A, p. 93, fig. 66.
Cope, E. D. 1875 V, p. 51.
Edwards, A. M. 1895 A. (Identification doubtful.)
Emmons, E. 1860 A, p. 175, fig. 152.
Flower, W. H. 1883 D, p. 375.
Leidy, J. 1859 G.
1869 A, p. 410.
Leidy, J. 1870 F.
Osborn, H. F. 1886 A.
1886 B, p. 360.
1887 E.
1888 G, pl. ix, fig. 77.
1891 C, p. 777.
1895 C, p. 6, pl. AA, fig. 2. ("Dromatherium.")
Trouessart, E. L. 1898 A, p. 1252.
Roger, O. 1896 A, p. 12.
Woodward, A. S. 1890 A, p. 393.
Zittel, K. A. 1893 B, p. 96, fig. 73.

Triassic; North Carolina, New Jersey?

Authors writing before 1886 included *Microconodon tenuirostris* Osb. in this species.

MICROCONODON Osborn. Type *M. tenuirostris* Osborn.

Osborn, H. F. 1886 A.
Ameghino, F. 1896 A.
Cope, E. D. 1888 R.
Goodrich, E. S. 1894 A, p. 429.
Marsh, O. C. 1891 I, p. 612.
Nicholson and Lydekker 1889 A, p. 1273.
Osborn, H. F. 1886 B, p. 362.
1887 D.
1887 E.
1888 F, p. 1073.
1888 G, p. 223.
1891 C, p. 777.
1892 I.
1893 G, p. 496.
1895 C, p. 3.
1898 R, p. 353.
Schlosser, M. 1890 C, p. 242, fig. I, 2.
Winge, H. 1893 C, p. 76.
Woodward, A. S. 1898 B, p. 256.
Zittel, K. A. 1893 B, p. 97.

Before the year 1886 included in *Dromatherium*.

Microconodon tenuirostris Osborn.

Osborn, H. F. 1886 A.
Cope, E. D. 1888 R, pl. xiv.
Osborn, H. F. 1886 B, p. 362.
1888 G, p. 223, fig. A, 10, B.
1898 R, p. 353, fig. 14.
Roger, O. 1896 A, p. 12.
Seeley, H. G. 1895 B, p. 89.
Trouessart, E. L. 1898 A, p. 1252.

Triassic; North Carolina.

Order ALLOTHERIA Marsh.

Marsh, O. C. 1880 F, p. 239.

Most of the authors below cited employ Cope's name *Multituberculata* for this group. Citations of such authors are followed by the contraction (Mult.).

Ameghino, F. 1894 A, p. 332. (Mult.)
Cope, E. D. 1884 O, p. 167. (Allotheria.)
1884 Y, p. 687. (Mult.)
1888 J. (Mult.)
1888 K. (Mult.)
1888 M. (Mult.)
1888 R. (Mult.)
1888 CC, p. 302. (Mult.)
1889 C. (Mult.)
1889 R, p. 874. (Mult.)
1891 N, p. 65. (Mult.)
1898 B, p. 102. (Mult.)
Flower and Lydekker 1891 A, p. 109. (Mult.)
Gadow, H. 1898 A, p. 39.
Goodrich, E. S. 1894 A, p. 429.
Haeckel, E. 1895 A, p. 476.
Hay, O. P. 1899 F, p. 682.
Lydekker, R. 1887 A, p. 195. (Mult.)
Major, Fors. 1893 A, p. 210.
Marsh, O. C. 1887 A, p. 345.
1889 D, p. 83.
Marsh, O. E. 1891 H.
1891 I, p. 239.
1892 B.
Matthew, W. D. 1899 A, p. 28. (Mult.)
Nicholson and Lydekker 1889 A, p. 1266. (Mult.)
Osborn, H. F. 1887 F, pp. 284, 285. (Mult.)
1888 B, p. 75. (Mult.)
1888 C, p. 232. (Mult.)
1888 E, p. 926. (Mult.)
1888 F, p. 1068. (Mult.)
1888 G. (Mult.)
1891 A. (Mult.)
1891 C, p. 778. (Mult.)
1891 E, p. 599. (Mult.)
1893 B, p. 313. (Mult.)
1893 D. (Mult.)
1897 C. (Mult.)
1898 O. (Mult.)
Owen, R. 1884 A. (Mult.)
Roger, O. 1896 A, p. 3. (Allotheria.)
Schlosser, M. 1890 C, p. 276. (Mult.)
Steinmann and Döderlein 1890 A, p. 698. (Mult.)
Trouessart, E. L. 1898 A, p. 1253.
Woodward, A. S. 1898 B, p. 248. (Mult.)
Zittel, K. A. 1893 B, p. 72.

BOLODONTIDÆ.

Osborn, H. F. 1887 F, p. 285.
Cope, E. D. 1887 H, p. 567. (Chirogidæ.)
1888 J. (Chirogidæ.)
1888 CC, p. 307. (Chirogidæ.)
1898 B, p. 102. (Chirogidæ.)
Haeckel, E. 1895 A, p. 470. (Bolodontida.)
Lydekker, R. 1887 A, p. 202.
Marsh, O. C. 1887 A, p. 329. (Bolodon.)
Nicholson and Lydekker 1889 A, p. 1269
Osborn, H. F. 1887 A. (Bolodon.)
Osborn, H. F. 1888 C, p. 233.
1888 G, pp. 213, 251.
1891 B, p. 44. (Allodontidæ.)
Owen, R. 1871 A, p. 54. (Bolodon.)
Roger, O. 1896 A, p. 4.
Steinmann and Döderlein 1890 A, p. 699.
Trouessart, E. L. 1898 A, p. 1258.
Woodward, A. S. 1898 B, p. 251. (Bolodon.)
Zittel, K. A. 1893 B, p. 77.

ALLACODON Marsh. Type *A. lentus* Marsh.

Marsh, O. C. 1889 F, p. 178.
Osborn, H. F. 1891 B.
1893 B, pp. 314, 315, 317.
Trouessart, E. L. 1898 A, p. 1258.
Zittel, K. A. 1893 B, p. 79.

Allacodon fortis Marsh.

Marsh, O. C. 1892 B, p. 255, pl. vii, fig. 4.
Roger, O. 1896 A, p. 4.
Trouessart, E. L. 1898 A, p. 1258.
Walcott, C. D. 1900 A, p. 23.
Cretaceous (Laramie); Wyoming.

Allacodon lentus Marsh.

Marsh, O. C. 1889 F, p. 178, pl. viii, figs. 17-31.
1897 C, p. 521, fig. 89.
Osborn, H. F. 1891 A, p. 130, fig. 7.
1891 B, p. 45.
1891 E, p. 604, fig. 9.
Roger, O. 1896 A, p. 4.
Trouessart, E. L. 1898 A, p. 1258.
Cretaceous (Laramie); Wyoming.

Allacodon pumilis Marsh.

Marsh, O. C. 1889 F, p. 179.
1892 B, p. 255, pl. vii, fig. 3.
Osborn, H. F. 1891 A, p. 131.
1891 E, p. 604.
Roger, O. 1896 A, p. 4.
Trouessart, E. L. 1898 A, p. 1258.
Walcott, C. D. 1900 A, p. 23.
Zittel, K. A. 1893 B, p. 79, fig. 49.
Cretaceous (Laramie); Wyoming.

Allacodon rarus Marsh.

Marsh, O. C. 1892 B, p. 256, pl. vii, fig. 5.
Roger, O. 1896 A, p. 4.
Trouessart, E. L. 1898 A, p. 1258.
Cretaceous (Laramie); Wyoming.

ALLODON Marsh. Type *A. laticeps* Marsh.

Marsh, O. C. 1881 F, p. 511.
Lydekker, R. 1887 A, p. 203. (=? Bolodon.)
1893 A. (Syn.? of Bolodon.)
Nicholson and Lydekker 1889 A, p. 1270.
Marsh, O. C. 1887 A, p. 329.
Osborn, H. F. 1887 A.
1888 C, p. 233.
1888 G, pp. 218, 251.
Osborn and Earle 1895 A, p. 5.
Schlosser, M. 1890 C, p. 275.
Steinmann and Döderlein 1890 A, p. 699.
Trouessart, E. L. 1898 A, p. 1258.
Winge, H. 1893 C, p. 77. (Allodon, Bolodon.)
Zittel, K. A. 1893 B, pp. 78, 722.

Allodon fortis Marsh.

Marsh, O. C. 1887 A, p. 331, pl. vii, figs. 7-10.
Roger, O. 1896 A, p. 4.
Trouessart, E. L. 1898 A, p. 1258.
Woodward, A. S. 1898 B, p. 250, fig. 147.
Zittel, K. A. 1893 B, p. 78, fig. 48 A, B, C.
Jurassic; Wyoming.

Allodon laticeps Marsh.

Marsh, O. C. 1881 F, p. 511.
1887 A, p. 331, pl. vii, figs. 1-6.
Osborn, H. F. 1888 G, p. 217, fig. 10.
Roger, O. 1896 A, p. 4.
Trouessart, E. L. 1898 A, p. 1258.
Zittel, K. A. 1893 B, p. 78, fig. 48 D, E, F.
Jurassic; Wyoming.

CHIROX Cope. Type *C. plicatus* Cope.

Cope, E. D. 1884 K, p. 321.
1887 H.
1888 I, p. 10.
1889 L.
Matthew, W. D. 1897 C, p. 265.
Nicholson and Lydekker 1889 A, p. 1269.
Osborn, H. F. 1887 F, p. 286.
1888 G p, 219.
Osborn, H. E. 1893 D.
Winge, H. 1893 C, p. 77.
Zittel, K. A. 1893 B, p. 79.

Chirox plicatus Cope.

Cope, E. D. 1884 K, p. 321.
1887 H.
1888 I, p. 10, fig. 7.

Cope, E. D. 1888 CC, p. 302.
1889 C, p. 269, fig. 91.
1898 B, p. 104, fig. 42.
Matthew, W. D. 1897 C, p. 268.
1899 A, p. 29.
Osborn, H. F. 1889 G, p. 219, fig. 12.
1891 E, p. 606, fig. 11.
Roger, O. 1896 A, p. 4.
Trouessart, E. L. 1898 A, p. 1258.
Eocene (Torrejon); New Mexico.

PLAGIAULACIDÆ.

Gill, T. 1872 B, p. 27.
Ameghino, F. 1889 A, p. 268. (Plagiaulacoidea, in part; Plagiaulacidæ.)
1891 B, p. 38.
Cope, E. D. 1882 U.
1882 W.
1884 O, p. 167.
1884 Y, p. 687.
1888 J.
1888 CC, p. 307.
1889 R, p. 874.
1898 B, p. 102.
Haeckel, E. 1895 A, p. 470. (Plagiaulacida.)
Lydekker, R, 1887 A, p. 195.
Marsh, O. C. 1879 G, p. 397.
1880 F, p. 239.
1881 F, p. 512.
1887 A, pp. 329, 344.
1889 D, p. 84 (Cimolodontidæ); p. 85 (Dipriodontidæ); p. 86 (Tripriodontidæ).
Marsh, O. C. 1889 F, p. 177. (Cimolomidæ.)
1891 I, p. 239.
Matthew, W. D. 1899 A, p. 28.
Nicholson and Lydekker 1889 A, p. 1267.
Osborn, H. F. 1887 F, p. 285.
1888 G, p. 218.
1891 B. (Plagiaulacidæ, Stereognathidæ.)
1891 C, p. 781.
1892 D.
1893 B.
1893 D.
1893 G, p. 214.
Roger, O. 1896 A, p. 4.
Schlosser, M. 1884 B, p. 640.
1888 A, p. 584.
Steinmann and Döderlein 1890 A, p. 700.
Winge, H. 1893 C, p. 77.
Woodward, A. S. 1898 B, p. 249.
Zittel, K. A. 1893 B, p. 79.

PLAGIAULACINÆ.

Osborn and Earle 1895 A, p. 11.

PLAGIAULAX Falconer. Type *P. becklesii* Falconer.

Falconer, H. 1857 A.
This genus being the type of the family *Plagiaulacidæ*, the following references to its literature are given, although no species are known from our region.
Ameghino, F. 1891 A, p. 40.
Cope, E. D. 1882 U, p. 416.
1882 W, p. 520.
1884 O, p. 168.
1884 Y, p. 691.
Falconer, H. 1862 A.
1868 A, ii, p. 408, pls. xxiii, xxiv.
Lemoine, V. 1882 A.
Lydekker, R. 1887 A, p. 196.
1893 A.
Nicholson and Lydekker 1889 A, p. 1267.
Osborn, H. F. 1888 C.
1888 G, p. 215.
Owen, R. 1871 A, p. 75.
Schlosser, M. 1890 C, p. 277.
Seeley, H. 1888 H, p. 141.
Winge, H. 1893 C, p. 78.
Woodward, A. S. 1898 B, p. 249
Zittel, K. A. 1893 B, p. 80.

CTENACODON Marsh. Type *C. serratus* Marsh.

Marsh, O. C. 1879 G, p. 396.
Cope, E. D. 1882 U, p. 416.
1882 W, p. 521.
1884 O, p. 168.
1884 Y, p. 691.
1888 J.
Lydekker, R. 1893 A.
Marsh, O. C. 1885 C.
1887 A, p. 332.
Nicholson and Lydekker 1889 A, p. 1267.
Osborn, H. F. 1887 F, p. 285.
1888 G, p. 215.
1893 A.
1893 B, p. 314.
Schlosser, M. 1890 C, p. 277.
Trouessart, E. L. 1898 A, p. 1254.
Winge, H. 1893 C, p. 77.
Woodward, A. S. 1898 B, p. 251.
Wortman, J. L. 1885 A, p. 299.
Zittel, K. A. 1893 B, pp. 81, 722.

Ctenacodon nanus Marsh.

Marsh, O. C. 1881 F, p. 512.
Roger, O. 1896 A, p. 4.
Trouessart, E. L. 1898 A, p. 1254.
Jurassic; Wyoming.

Ctenacodon potens Marsh.

Marsh, O. C. 1887 A, p. 333, pl. viii, figs. 2, 3, 7–9.
Osborn, H. F. 1891 E, p. 604, fig. 8a.
Roger, O. 1896 A, p. 4.
Trouessart, E. L. 1898 A, p. 1254.
Woodward, A. S. 1898 B, p. 250, fig. 147.
Jurassic; Wyoming.

Ctenacodon serratus Marsh.

Marsh, O. C. 1879 G, p. 396.
Cope, E. D. 1884 Y, p. 698, fig. 7.
1888 J, fig. 9*a*.
1889 C, p. 270, fig. 93*a*.
Marsh, O. C. 1880 F, p. 238, figure.
1887 A, p. 333, pl. viii, figs. 1, 4-6.
Marsh, O. C. 1897 C, p. 508, fig. 70.
Osborn, H. F. 1888 G, p. 216, fig. 8.
Roger, O. 1896 A, p. 4.
Trouessart, E. L. 1898 A, p. 1254.
Woodward, A. S. 1898 B, p. 250, fig. 147.
Zittel, K. A. 1893 B, p. 80, figs. 53, 54.
Jurassic; Wyoming.

NEOPLAGIAULAX Lemoine. Type *N. eocænus* Lemoine.

Lemoine, V. 1863 A.
Cope, E. D. 1887 H, p. 567.
Lemoine, V. 1891 A, p. 289.
Lydekker, R. 1887 A, p. 196.
Marsh, O. C. 1887, A, p. 344.
Matthew, W. D. 1897 C. p. 265.
Nicholson and Lydekker 1889 A, p. 1267.
Osborn, H. F. 1891 C, p. 781.
1892 I.
Roger, O. 1896 A, p. 6.
Schlosser, M. 1890 C, p. 277.
Winge, H. 1893 C, p. 78.
Zittel, K. A. 1893 B, p. 84.

Neoplagiaulax americanus Cope.

Cope, E. D. 1885 M, p. 493.
1886 I, p. 451.
Cope, E, D. 1888 CC, p. 302.
Matthew, W. D. 1897 C, p. 263.
1899 A, p. 28.
Osborn and Earle 1895 A, p. 7.
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1257.
Eocene (Puerco); New Mexico.

Neoplagiaulax molestus Cope.

Cope, E. D. 1869 I.
1888 CC, p. 307, pl. v, figs. 10, 11.
Matthew, W. D. 1897 C, p. 263.
1899 A, p 28.
Osborn and Earle 1895 A, p. 6. (Chirox.)
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1257.
Eocene (Torrejon); New Mexico.

PTILODUS Cope. Type *P. mediævus* Cope.

Cope, E. D. 1881 V.
1882 U, p. 416.
1882 W, p. 520.
1884 O, pp. 168, 172.
1884 Y, p. 691.
1888 J, p. 12.
Lydekker, R. 1887 A, p. 196.
Nicholson and Lydekker 1889 A, p. 1267.
Osborn, H. F. 1888 G, p. 217.
1891 A, p. 134.
1893 B, p. 314, pl. vii, figs. 1-6, text figs. 1, 2.
1893 D, p. 30.
Winge, H. 1893 C, p. 78.
Woodward, A. S. 1898 B, p. 252.
Zittel, K. A. 1893 B, p. 83.

Ptilodus mediævus Cope.

Cope, E. D. 1881 V.
1882 W, p. 522.
1884 O, p. 173, pl. xxiii *d*, fig. 1.
1884 Y, p. 696, fig. 8.
Cope, E. D. 1888 CC, p. 302.
1898 B, p. 104, fig. 41.
Lydekker, R. 1887 A, p. 196, fig. 30.
Matthew, W. D. 1897 C, p. 263.
1899 A, p. 28.
Osborn and Earle 1895 A, p. 7.
Roger, O, 1896 A, p. 5.
Trouessart, E. L. 1898 A, p. 1256.
Eocene (Torrejon); New Mexico.

Ptilodus trouessartianus Cope.

Cope, E. D. 1882 AA, p. 686.
1884 O, p. 737, pl. xxv *f*, fig. 19.
1885 M, p. 493.
1888 CC, p. 302.
Matthew, W. D. 1897 C, p. 263.
1899 A, p. 28.
Osborn, H. F. 1893 B, p. 315, text fig. 1.
Roger O, 1896 A, p. 5.
Trouessart, E. L. 1898 A, p. 1256.
Eocene (Torrejon); New Mexico.

CIMOLOMYS Marsh. Type *C. gracilis* Marsh.

Marsh, O. C. 1889 D, p. 84.
Cope, E. D. 1892 U, p. 762. (Cimolodon.)
Marsh, O. C. 1889 D, p. 84 (Cimolodon, type *C. nitidus*); p. 85 (Nanomys, type *N. minutus*).
1892 B, p. 261. (Nanomyops, to replace Nanomys.)
Nicholson and Lydekker 1889 A, p. 1268.
Osborn, H. F. 1891 A, p. 125.
1891 B.
1893 B, p. 314. (Ptilodus.)
Steinmann and Döderlein 1890 A, p. 700.
Trouessart, E. L. 1898 A, p. 1256.
Zittel, K. A. 1893 B, p. 82.

Cimolomys agilis (Marsh).

Marsh, O. C. 1889 B, p. 255, pl. vi, fig. 8. (Cimolodon.)
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1257.
Walcott, C. D. 1900 A, p. 23. (Cimolodon.)
Cretaceous (Laramie); Wyoming.

Cimolomys bellus Marsh.

Marsh, O. C. 1889 D, p. 84.
1892 B, p. 262, pl. vii, fig. 2.
Osborn, H. F. 1891 A, p. 125. (Syn. of C. gracilis.)

Osborn, H. F. 1891 B, p. 44.
1891 E, p. 599.
1893 B, p. 316. (Ptilodus.)
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1256. (Syn. of C. gracilis.)
Cretaceous (Laramie); Wyoming.

Cimolomys digona Marsh.

Marsh, O. C. 1889 F, p. 177, pl. vii, figs. 1-4, 13-16.
1897 C, p. 521, fig. 87.
Osborn, H. F. 1891 A, p. 126.
1891 B, p. 44.
1891 E, p. 599.
1893 B, p. 317. (Ptilodus.)
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1256.
Cretaceous (Laramie); Wyoming.

Cimolomys formosus (Marsh).

Marsh, O. C. 1889 F, p. 179, pl. viii, figs. 32-39. (Halodon.)
Osborn, H. F. 1891 A, p. 126, fig. 1,*c*.
1891 B, p. 44.
1893 B, p. 315. (Ptilodus.)
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1257.
Zittel, K. A. 1893 B, p. 84, fig. 61,*C*. (Halodon.)
Cretaceous (Laramie); Wyoming.

Cimolomys gracilis Marsh.

Marsh, O. C. 1889 D, p. 84, pl. ii, figs. 1-4.
Osborn, H. F. 1891 A, p. 125, figs. 2,*a*, 3.
1891 B, p. 44.
1891 E, pp. 599, 601, figs. 3, 4.
1893 B, p. 317. (Ptilodus.)
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1256.
Zittel, K. A. 1893 B, p. 81, fig. 56.
Cretaceous (Laramie); Wyoming.

Cimolomys minutus (Marsh).

Marsh, O. C. 1889 D, p. 85, pl. ii, figs. 9-12. (Nanomys.)
1892 B, p. 261, pl. vi, fig. 2. (Nanomyops.)
Osborn, H. F. 1891 A, p. 126, figs. 2,*c*, 3.
1891 E, p. 600, figs. 3, 4.
1892 B, p. 44.
1893 B, p. 316.
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1256. (Syn. of C. gracilis.)
Cretaceous (Laramie); Wyoming.

Cimolomys nitidus (Marsh).

Marsh, O. C. 1889 D, p. 84, pl. ii, figs. 5-8. (Cimolodon.)
Cope, E. D. 1892 U, p. 762. (Cimolodon.)
Marsh, O. C. 1892 B, p. 255, pl. vi, figs. 7, 9. (Cimolodon.)
Osborn, H. F. 1891 A, p. 126, fig. 2,*b*. (Cimolodon.)
1891 B, p. 44. (Cimolomys.)
1891 E, p. 600, figs. 3, 4.
1893 B, p. 316. (Ptilodus.)
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1257. (Syn. of C. gracilis.)
Zittel, K. A. 1893 B, p. 82, figs. 57, 58.
Cretaceous (Laramie); Wyoming.

Cimolomys parvus (Marsh).

Marsh, O. C. 1892 B, p. 254, pl. vi, fig. 4. (Cimolodon.)
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1257.
Cretaceous (Laramie); Wyoming.

Cimolomys serratus (Marsh).

Marsh, O. C. 1889 D, p. 87, pl. iii, figs. 4-6, 14-17. (Halodon.)
Osborn, H. F. 1891 A, p. 126, figs. 1,*b*, 5,*c*. (Halodon.)
1891 B, p. 44.
1891 E, p. 600, fig. 2, 4.
1893 B, pp. 315, 318. (In part to Ptilodus; in part to Meniscoëssus.)
Roger, O. 1896 A, p. 6. (Halodon.)
Trouessart, E. L. 1898 A, p. 1257. (Syn. of C. gracilis.)
Cretaceous (Laramie); Wyoming.

MENISCOËSSUS Cope. Type *M. conquistus* Cope.

Cope, E. D. 1882 BB.
1884 Y, p. 691.
1888 J.
1889 L.
1892 U, p. 762. (Dipriodon =? Ptilodus.)
Marsh, O. C. 1889 D, p. 85 (Dipriodon, type *D. robustus*); p. 86 (Selenacodon, type *S. fragilis;* Tripriodon, type *T. cœlatus;*); p. 87 (Halodon in part, type *H. sculptus*).
1891 I.
1892 D, p. 82.
1892 G, p. 174.
Nicholson and Lydekker 1889 A, p. 1268.
Osborn, H. F. 1887 F, p. 286.
1888 G, p. 217.
1891 A, p. 128.
1891 B.
1891 C, pp. 779, 782.
Osbosn, H. F. 1891 E, pp. 597, 609.
1893 B, pp. 313, 317, 320. (Syn? of Paronychodon.)
1893 D, p. 30.
Schlosser, M. 1890 C, p. 277.
Trouessart, E. L. 1898 A, p. 1254.
Wortmann, J. L. 1883 A, p. 709.
1885 A, p. 296.
Zittel, K. A. 1893 B, p. 83.

Meniscoëssus brevis (Marsh).

Marsh, O. C. 1889 F, p. 177, pl. vii, figs. 9-12. (Selenacodon.)
Osborn, H. F. 1891 A, p. 129, fig. 5,*d*.
1891 B, p. 45.
1891 E, p. 602, fig. 5.
1893 B, p, 318.
Roger, O. 1896 A, p. 5. (Syn. of M. conquistus.)

Trouessart, E. L. 1898 A, p. 1255. (Syn. of M. conquistus.)
Cretaceous (Laramie); Wyoming.

Meniscoëssus caperatus (Marsh).

Marsh, O. C. 1889 D, p. 86, pl. iii, figs. 18-20. (Tripriodon.)
Dana, J. D. 1896 A, p. 853, fig. 1443. (Tripriodon.)
Marsh, O. C. 1892 B, p. 261, pl. v, fig. 2. (Tripriodon.)
Osborn, H. F. 1891 A, p. 129.
1891 B, p. 45.
1891 E, p. 602, fig. 8.
1893 B, p. 318.
Trouessart, E. L. 1898 A, p. 1255. (Syn. of M. conquistus.)
Cretaceous (Laramie); Wyoming.

Meniscoëssus cœlatus (Marsh).

Marsh, O. C. 1889 D, p. 86, pl. ii, figs. 19-21. (Tripriodon.)
Dana, J. D. 1896 A, p. 853, fig. 1442. (Tripriodon.)
Major, Fors. 1893 A, p. 211. (Tripriodon.)
Osborn, H. F. 1891 A, p. 129, fig. 4,*b*.
1891 B, p. 45.
1891 E, p. 602, figs. 5, 8.
1893 B, p. 319.
Roger, O. 1896 A, p. 5. (Syn. of M. conquistus.)
Trouessart, E. L. 1898 A, p. 1255. (Syn. of M. conquistus.)
Zittel, K. A. 1893 B, p. 82, fig. 59B. (Tripriodon.)
Cretaceous (Laramie); Wyoming.

Meniscoëssus conquistus Cope.

Cope, E. D. 1882 BB.
1884 Y, p. 691, fig. 7.
1888 J.
1889 C, p. 270, fig. 98 *d*, *f*.
1889 L, p. 490.
Marsh, O. C. 1889 D, p. 82.
Osborn, H. F. 1891 B p. 45.
1891 E, p. 597 E, fig. 1.
1891 I.
1893 B, p. 319.
Osborn and Earle, 1895 A, p. 14.
Roger, O. 1896 A, p. 5.
Trouessart, E. L. 1898 A, p. 1255.
Zittel, K. A. 1893 B, p. 82, fig. 59 A.
Cretaceous (Laramie); Wyoming.

Meniscoëssus fragilis (Marsh).

Marsh, O. C. 1889 D, p. 86, pl. ii, figs. 22-24. (Selenacodon.)
Major, Fors. 1893 A, p. 211. (Selenacodon.)
Osborn, H. F. 1891 A, p. 128, figs. 4,*c*, 5,*d*, 6.
1891 B, p. 45.
1891 E, p. 602, figs. 5, 8.
1893 B, p. 318.
Roger, O. 1896 A, p. 5. (Syn. of M. conquistus.)
Trouessart, E. L. 1898 A, p. 1255. (Syn. of M. conquistus.)
Cretaceous (Laramie); Wyoming.

Meniscoëssus lunatus (Marsh).

Marsh, O. C. 1889 D, p. 85, pl. ii, figs. 16-18. (Dipriodon.)
Cope, E. D. 1892 U, p. 762. (?Ptilodus.)
Dana, J. D. 1896 A, p. 853, fig. 1440. (Dipriodon.)
Marsh, O. C. 1892 B, p. 261, pl. v, figs. 6, 7. (Dipriodon.)
Osborn, H. F. 1891 A, pp. 128, 130, figs. 4,*d*, 6. (Dipriodon.)
1891 E, p. 602, figs. 5, 8.
1893 B, p. 318.
Roger, O. 1896 A, p. 5. (Syn. of M. conquistus.)
Trouessart, E. L. 1898 A, p. 1255.
Zittel, K. A. 1893 B, p. 83, fig. 60A. (Dipriodon.)
Cretaceous (Laramie); Wyoming.

Meniscoëssus robustus (Marsh).

Marsh, O. C. 1889 D, p. 85, pl. ii, figs. 13-15. (Dipriodon.)
Major, Fors. 1893 A, p. 211. (Dipriodon.)
Osborn, H. F. 1891 A, pp. 128, 130, figs. 4,*a*. (Dipriodon.)
1891 B, p. 45.
1891 C, p. 782.
1891 E, p. 601, figs. 5, 7, 8.
1893 B, p. 318.
Roger, O. 1896 A, p. 5. (Syn. of M. conquistus.)
Trouessart, E. L. 1898 A, p. 1255. (Syn. of M. conquistus.)
Cretaceous (Laramie); Wyoming.

Meniscoëssus sculptus (Marsh).

Marsh, O. C. 1889 D, p. 87, pl. iii, figs. 7-13. (Halodon.)
Dana, J. D. 1896 A, p. 853, figs. 1441 *a–c*. (Halodon.)
Marsh, O. C. 1892 B, p. 261, pl. v, fig. 4. (Halodon.)
Osborn, H. F. 1891 A, p. 126, figs. 1,*a*, 5,*a*. (Halodon.)
1891 B, p. 44.
1891 E, p. 600, fig. 2.
1893 B, p. 318.
Roger, O. 1896 A, p. 5. (Syn. of M. conquistus.)
Trouessart, E. L. 1898 A, p. 1255. (Syn. of M. conquistus.)
Cretaceous (Laramie); Wyoming.

ORACODON Marsh. Type *O. anceps* Marsh.

Marsh, O. C. 1889 F, p. 178.
Osborn, H. F. 1891 B.
1893 B, p. 317. (Syn.? of Meniscoëssus.)
Zittel, K. A. 1893 B, p. 83.

Oracodon anceps Marsh.

Marsh, O. C. 1889 F, p. 178, pl. viii, figs. 13-16.
1892 B, p. 256, pl. vii, figs. 6, 7.
Marsh, O. C. 1897 C, p. 521, fig. 91.
Osborn, H. F. 1891 A, p. 131.
1891 B, p. 45.
1891 E, p. 605.
1893 B, p. 319.
Roger, O. 1896 A, p. 5.
Trouessart, E. L. 1898 A, p. 1256.
Cretaceous (Laramie); Wyoming.

Oracodon conulus Marsh.

Marsh, O. C. 1892 B, p. 256, pl. vii, fig. 8.
Dana, J. D. 1896 A, p. 853, fig. 1439 *a*, *b*.
Osborn, H. F. 1893 B, p. 319.
Roger, O. 1896 A, p. 5.
Trouessart, E. L. 1898 A, p. 1256.
Walcott, C. D. 1900 A, p. 29.
Zittel, K. A. 1893 B, p. 84, fig. 68.
Cretaceous (Laramie); Wyoming.

CAMPTOMUS Marsh. Type *C. amplus* Marsh.

Marsh, O. C. 1889 D, p. 87.
Nicholson and Lydekker 1889 A, p. 1268.

Camptomus amplus Marsh.

Marsh, O. C. 1889 D, p. 87, pl. v. figs. 1-4, 18-23.
Osborn, H. F. 1891 A, p. 131.
Osborn, H. F. 1891 B, p. 45.
Osborn, H. F. 1891 E, p. 605.
Trouessart, E. L. 1898 A, p. 1256.
Woodward, A. S. 1898 B, p. 253.
Zittel, K. A. 1893 B, p. 73, fig. 44.
Cretaceous (Laramie); Wyoming.

POLYMASTODONTINÆ.

Osborn and Earle 1895 A, p. 11.
Unless otherwise indicated, the following authorities employ for this group, regarded as of family value, the term *Polymastodontidæ*.
Cope, E. D. 1884 Y, p. 687.
1888 J.
1888 CC, p. 307.
Haeckel, E. 1895 A, p. 470. (Polymastodontida.)
Lydekker, R. 1887 A, p. 199.
Nicholson and Lydekker 1889 A, p. 1269.
Osborn, H. F. 1887 F, p. 286.
1888 C.
1888 G, pp. 213, 221.
Roger, O. 1896 A, p. 6.
Schlosser, M. 1890 C, p. 277.
Trouessart, E. L. 1898 A, p. 1253.
Woodward, A. S. 1898 B, p. 252.
Zittel, K. A. 1893 B, p. 85.

CATOPSALIS Cope. Type *C. foliatus* Cope.

Cope, E. D. 1882 U, p. 416.
1882 W, p. 520.
1884 O, pp. xxxv, 168, 170, 788.

Catopsalis foliatus Cope.

Cope, E. D. 1882 U, p. 416.
1884 O, p. 171, pl. xxiiid, fig. 2.
1884 Y, p. 688, fig. 5. (Polymastodon.)
Cope, E. D. 1888 CC, p. 302. (Polymastodon.)
Matthew, W. D. 1897 C, p. 263.
1899 A, p. 28.
Osborn and Earle 1895 A, p. 11. (Polymastodon.)
Roger, O. 1896 A, p. 7. (Polymastodon.)
Trouessart, E. L. 1898 A, p. 1254. (Polymastodon.)
Eocene (Puerco); New Mexico.

TÆNIOLABIS Cope. Type *T. sulcatus* Cope.

Cope, E. D. 1882 Z, p. 604.
1884 O, p. 193. (Tæniolabis.)
1885 M, p. 493. (Syn? of Polymastodon.)
Zittel, K. A. 1893 B, p. 85. (Syn. of Polymastodon.)
By most authors this genus is included with *Polymastodon*, and to this the student is referred.

Tæniolabis sulcatus Cope.

Cope, E. D. 1882 Z, p. 604.
1884 O, p. 193, pl. xxiii *e*, fig. 7. (T. scalper.)
1885 M, p. 493. (T. scalper, syn.? of Polymastodon taöensis).
Roger, O. 1896 A, p. 6. (Syn. of Polymastodon taöensis.)
Eocene (Puerco); New Mexico.

After 1884 Prof. Cope regarded this species as based on what was probably an incisor tooth of *Polymastodon taöensis* Cope. Should Cope's identification eventually prove correct, the name *Tæniolabis* will supersede *Polymastodon*. The name *scalper* appears to be merely a substitute for the earlier *T. sulcatus*.

POLYMASTODON Cope. Type *P. taöensis* Cope.

Cope, E. D. 1882 AA, p. 684.
1884 O, pp. xxxv, 168, 782.
1884 Y, p. 688.
1888 I, p. 11.
1889 L.
Lydekker, R. 1887 A, p. 200.
Nicholson and Lydekker 1889 A, p. 1269.
Osborn, H. F. 1887 A.
1888 C.
1891 E, p. 610.
1893 B.
1898 E.
Osborn and Earle 1895 A, p. 11.
Steinmann and Döderlein 1890 A, p. 700.
Tomes, C. S. 1898 A, p. 330.
Trouessart, E. L. 1898 A, p. 1253.
Winge, H. 1893 B, p. 78.
Woodward, A. S. 1898 B, p. 252.
Zittel, K. A. 1893 B, p. 85.

Polymastodon attenuatus Cope.

Cope, E. D. 1885 M, p. 494.
1888 CC, p. 302.
Matthew, W. D. 1897 C, p. 263.

Osborn and Earle 1895 A, p. 12, fig. 1A.
Roger, O. 1896 A, p. 7.
Trouessart, E. L. 1898 A, p. 1253.
Woodward, A. S. 1898 B, p. 253, fig. 149.
Eocene (Puerco); New Mexico.

Polymastodon fissidens Cope.

Cope, E. D. 1884 K, p. 322. (Catopsalis.)
1884 Y, p. 688.
1888 CC, p. 302.
Matthew, W. D. 1897 C, p. 263.
Osborn and Earle 1895 A, pp. 12, 14.
Roger, O. 1896 A, p. 7.
Trouessart. E. L. 1898 A, p. 1253.
Eocene (Torrejon); New Mexico.

Polymastodon latimolis Cope.

Cope, E. D. 1885 J, p. 385.
1888 CC, p. 302.
Matthew, W. D. 1899 A, p. 28.
Osborn and Earle 1895 A, pp. 11, 12.
Roger, O. 1896 A, p. 7.
Trouessart, E. L. 1898 A, p. 1253.
Eocene (Puerco); New Mexico.

Polymastodon selenodus Osborn and Earle.

Osborn and Earle 1895 A, pp. 12, 15.
Matthew, W. D. 1897 C, p. 263.
1899 A, p. 28.
Roger, O. 1896 A, p. 7.
Trouessart, E. L. 1898 A, p. 1254.
Eocene (Puerco); New Mexico.

Polymastodon taöensis Cope.

Cope, E. D. 1882 AA, p. 684.
1882 AA, p. 685. (Catopsalis pollux.)
1883 E. (Catopsalis pollux.)
1884 O, p. 732, pl. xxxiii *c*, fig. 6 (Polymastodon taöensis); p. 734, pl. xxiii *c*, figs. 1–5 (Catopsalis pollux).
1884 Y, p. 689, figs. 3, 4.
1885 M, p. 498.
1888 I, p. 11, fig. 8.
1888 CC, p. 302.
1889 C, p. 270, fig. 92.
Lydekker, R. 1887 A, p. 200, fig. 32.
Matthew, W. D. 1897 C, p. 263.
1899 A, p. 28.
Osborn and Earle 1895 A, pp. 11, 12, fig. 1, C.
Roger, O. 1896 A, p. 6.
Trouessart, E. L. 1898 A, p. 1253.
Woodward, A. S. 1898 B, p. 253, fig. 149.
Zittel, K. A. 1893 B, p. 86, fig. 66.
Eocene (Puerco); New Mexico.

Subclass EUTHERIA Gill.

Gill, T. 1872 B, p. vi.
Cope, E. D. 1887 Q.
1889 R, p. 874.
1891 N, pp. 65, 66.
1898 B, p. 104.
Flower, W. H. 1883 A.
1883 D, p. 383.
Flower and Lydekker 1891 A, p. 173.
Gill, T. 1888 A.
Haeckel, E. 1895 A, p. 467. (Prodidelphia.)
Osborn, H. F. 1893 A, p. 391.
1894 A. (Cenoplacentalia, Mesoplacentalia.)
1898 L.
1899 B, p. 92.
Osborn and Earle 1895 A, p. 3. (Cenoplacentalia, Mesoplacentalia.)
Schlosser, M. 1893 A. p. 301.
Tomes, C. S. 1898 A, p. 305.
Woodward, A. S. 1898 B, p. 254. (Metatheria.)
Zittel, K. A. 1893 B, p. 117. (>Placentalia.)

Superorder DIDELPHIA Blainville.

Cope, E. D. 1889 R, p. 874.
1898 B, p. 104.
Flower W. H. 1883 A. (Metatheria, Didelphia.)
1883 D, p. 378. (Metatheria.)
1885 A.
Flower and Lydekker 1891 A, p. 128. (Metatheria, Didelphia.)
Gadow, H. 1898 A, p. 40. (Metatheria.)
Gill, T. 1872 A, p. 305.
1872 B, pp. 25, 46.
Hay, O. P. 1899 F, p. 682.
Huxley, T. H. 1872 A, p. 276.
1880 B. (Metatheria.)
Nicholson and Lydekker 1889 A, p. 1270.
Osborn, H. F. 1893 A, p. 391. (Metatheria.)
1898 L. (Metatheria.)
Parker, W. K. 1885 A, p. 59. (Metatheria.)
Wilson and Hill 1897 A, p. 429. (Metatheria.)
Woodward, A. S. 1898 B, p. 254. (Metatheria.)

Order MARSUPIALIA.

Baird, S. F. 1857 A, p. 230. (Marsupiata.)
Baur, G. 1885 K, p. 475.
Bensley, B. A. 1900 A, p. 558.
Cope, E. D. 1873 E, p. 644.
1880 B, p. 453.
1884 E.
1884 O, pp. 167, 788.
Cope, E. D. 1884 Y.
1888 D, p. 255.
1889 C.
1889 R, pp. 874, 876 (Pantotheria, in part; Marsupialia.)
1891 N, p. 69 (Marsupialia); p. 72 (Pantotheria).

Flower, W. H. 1869 A, p. 267.
1876 B, xiii, p. 327.
1885 A.
Flower and Lydekker 1891 A, p. 128.
Gaudry, A. 1878 B, p. 9.
Gegenbaur, C. 1898 A.
Gill, T. 1872 A, p. 305.
1872 B, pp. 25, 46. (Didelphia.)
Gill and Coues 1877 A, p. 1072.
Gruber, W. 1859 A.
Haeckel, E. 1899 A, p. 479.
Huxley, T. H. 1870 A.
1872 A, p. 273 (Metatheria); p. 276 (Didelphia).
Kollman, J. 1888 A.
Kükenthal, W. 1891 A, p. 368.
1892 A.
Leche, W. 1893 A, p. 521.
1893 B.
1895 A, p. 83.
1896 A, p. 292.
1896 B.
Lydekker, R. 1887 A, p. ix (Pantotheria, in part); p. 146 (Marsupialia).
1896 B.
1900 A, p. 922.
Marsh, O. C. 1877 E.
1880 F, p. 239. (Pantotheria, in part.)
1885 C. (Pantotheria, in part.)
1887 A, p. 345. (Pantotheria, in part; Marsupialia.)
Nicholson and Lydekker 1889 A, p. 1272.
Osborn, H. F. 1888 G, p. 256.
1891 A, p. 125. (Pantotheria, in part.)
1891 C, p. 780. (Pantotheria, in part.)
1891 E, p. 599. (Pantotheria, in part.)
1893 A, p. 379.
1893 D.
1898 L.
1900 C, p. 566.
Owen, R. 1838 A, p. 120.
1839 A.
1839 D.
Owen, R. 1843 A, p. 72.
1845 B, p. 278.
1851 C, p. 733.
1866 B, p. 328.
1868 A, p. 285.
1871 A.
Parker, W. K. 1868 A, p. 195.
Paulli, S. 1899 A, p. 147.
Pollard, E. C. 1893 A.
Reh, L. 1895 A, p. 163.
Roger, O. 1889 A.
Röse, C. 1892 A, p. 638.
1892 D, p. 508.
1892 E.
Ryder, J. 1878 A, p. 49.
Schlosser, M. 1886 C.
1889 A.
1890 A.
1890 C.
1890 D.
1892 A.
1893 A.
Schmidt, O. 1886 A, p. 93.
Schwalbe, J. 1894 A.
Slade, D. D. 1888 A, p. 242.
Steinmann and Döderlein 1890 A, p. 700.
Thomas, O. 1888 A.
1892 B.
Thompson, J. A. 1897 A, p. 43.
Tims, H. W. M. 1896 A.
Tomes, C. S. 1898 A, p. 562.
Tornier, G. 1890 A.
Trouessart, E. L. 1898 A, p. 1155.
Turner, W. 1899 A.
Weyhe, —— 1875 A, p. 107.
Wilson and Hill 1897 A, p. 427.
Winge, H. 1893 C, pp. 61, 86.
Woodward, A. S. 1898 B, p. 255.
Woodward, M. F. 1893 A.
1896 B.
Wortman, J. L. 1886 A, p. 493.
Zittel, K. A. 1893 B, p. 86 (Marsupialia); pp. 95, 723, 724 (Pantotheria, in part).

Suborder POLYPROTODONTIA.

Flower and Lydekker 1891 A, p. 133.
Gadow, H. 1898 A, p. 40.
Lydekker, R. 1887 A, p. 254.
Nicholson and Lydekker 1889 A, p. 1272.
Owen, R. 1868 A, p. 293. ("Polyprotodont.")
1871 A, p. 88. ("Polyprotodont section.")
Roger, O. 1896 A, p. 12.
Woodward, A. S. 1898 B, p. 255.

STAGODONTIDÆ.

Marsh, O. C. 1889 F, p. 178.
Cope, E. D. 1892 U, p. 760. (Thlæodontidæ.)
Marsh, O. C. 1892 B, pp. 256, 257.
Osborn, H. F. 1891 B, p. 45.
1891 C, p. 780.
1892 D.

STAGODON Marsh. Type *S. nitor* Marsh.

Marsh, O. C. 1889 F, p. 178.
Ameghino, F. 1894 A, p. 335.
Cope, E. D. 1892 U, p. 760.
Marsh, O. C. 1891 I, p. 240.
1892 B, p. 257.
Osborn, H. F. 1891 B, p. 45.
1891 C, p. 780.
1893 B, p. 324.
Trouessart, E. L. 1898 A, p. 670.
Zittel, K. A. 1893 B, p. 510.

Stagodon nitor Marsh.

Marsh, O. C. 1889 F, p. 178, pl. vii. figs. 22-25.
1892 B, p. 262, pl. viii, figs. 1, 2.
Osborn, H. F. 1891 A, p. 131, fig. 8a.
1891 B, p. 45.

Osborn, H. F. 1891 C, p. 780, fig. 1.
1891 E, p. 606, fig. 12.
1893 B, p. 323.
Roger, O. 1896 A, p. 90.
Zittel, K. A. 1893 B, p. 511, fig. 425A.
Cretaceous (Laramie); Wyoming.

Stagodon tumidus Marsh.

Marsh, O. C. 1889 F, p. 178, pl. vii, figs. 17-21.
Dana, J. D. 1896 A, p. 853, fig. 1438 *a*, *b*.
Marsh, O. C. 1892 B, p. 262, pl. viii, fig. 3.
Roger, O. 1896 A, p. 89.
Cretaceous (Laramie); Wyoming.

Stagodon validus Marsh.

Marsh, O. C. 1892 B, p. 256, pl. viii, figs. 4-7.
Cope, E. D. 1892 U, p. 760.
Dana, J. D. 1896 A, p. 853, fig. 1437 *a-e*.
Marsh, O. C. 1897 C, p. 521, fig. 92.
Osborn, H. F. 1891 B, p. 45.
Roger, O. 1896 A, p. 90.
Zittel, K. A. 1893 B, p. 511, figs. 425B, 426.
Cretaceous (Laramie); Wyoming.

Thlæodon Cope. Type *T. padanacus* Cope.

Cope, E. D. 1892 U, p. 759.
1892 D.
Osborn, H. F. 1893 A, p. 333.
1893 B, pp. 324, 328.
1893 D.
Zittel, K. A. 1893 B, p. 511.

Thlæodon padanicus Cope.

Cope, E. D. 1892 U, p. 759, pl. xxii.
Roger, O. 1896 A, p. 90.
Trouessart, E. L. 1898 A, p. 669.
Cretaceous (Laramie); Wyoming.

Platacodon Marsh. Type *P. nanus* Marsh.

Marsh, O. C. 1889 F, p. 178.
1892 B, p. 259.

Platacodon nanus Marsh.

Marsh, O. C. 1889 F, p. 178, pl. viii, figs. 4-12.
Hatcher, J. B. 1900 A, p. 719.
Marsh, O. C. 1892 B, p. 262, pl. xi, figs. 6, 7.
Osborn, H. F, 1891 A, p. 132, fig. 8*b*.
1891 B, p. 45.
1891 E, p. 609, fig. 12*b*.
1893 B, p. 323.
Cretaceous (Laramie); Wyoming.

By Hatcher this genus has been referred to the fishes.

CIMOLESTIDÆ.

Marsh, O. C. 1892 B, p. 257.
Trouessart, E. L. 1898 A, p. 1202. (Epanorthidæ, in part.)

Pediomys Marsh. Type *P. elegans* Marsh.

Marsh, O. C. 1889 D, p. 89.
Nicholson and Lydekker 1889 A, p. 1277.
Osborn, H. F. 1891 A, p. 131.
1891 B, p. 45.
1891 E, p. 609.
1893 B, p. 324.
Zittel, K. A. 1893 B, p. 102.

Pediomys elegans Marsh.

Marsh, O. C. 1889 D, p. 89, pl. iv, figs. 23-25.
Marsh, O. C. 1892 B, p. 262, pl. x.
Osborn, H. F. 1891 A, p. 131.
1891 B, p. 45.
1891 E, p. 606.
1893 B, p. 323.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1249.
Cretaceous (Laramie); Wyoming.

Batodon Marsh. Type *B. tenuis* Marsh.

Marsh, O. C. 1892 B, p. 258.
Osborn, H. F. 1893 B, p. 324.
Zittel, K. A. 1893 B, p. 106.

Batodon tenuis Marsh.

Marsh, O. C. 1892 B, p. 258, pl. x, fig. 6; pl. xi, fig. 2.
Dana, J. D. 1896 A, p. 853, fig. 1436 *a-e*.
Osborn, H. F. 1893 B. p. 324.
Roger, O. 1896 A, p. 19.
Trouessart, E. L. 1898 A, p. 1204.
Walcott, C. D. 1900 A, p. 23.
Zittel, K. A. 1893 B, p. 106, fig. 92.
Cretaceous (Laramie); Wyoming.

Didelphodon Marsh. Type *D. vorax* Marsh.

Marsh, O. C. 1889 D, p. 88.
1889 F, p. 179. (Didelphops, to replace Didelphodon.)
1889 I, p. 15. (Didelphops.)
Nicholson and Lydekker 1889 A, p. 1277.
Osborn, H. F. 1891 B.
1891 E, p. 610,
1893 B, p. 323.

Roger, O. 1896 A, p. 18. (Didelphops.)
Woodward, M. F. 1896 A, p. 586.
Zittel, K. A. 1893 B, p. 105.

Didelphodon comptus Marsh.

Marsh, O. C. 1889 D, p. 88, pl. iv, figs. 5-7, 20-22.
Dana, J. D. 1896 A, p. 853, fig. 1433 *a-e*. (Didelphops.)
Marsh, O. C. 1892 B, p. 262, pl. x, figs. 1, 2. (Didelphops.)
Osborn, H. F. 1891 A, p. 131. (Didelphops.)
1891 B, p. 45. (Didelphops.)
1891 E, p. 606. (Didelphops.)
Roger, O. 1896 A, p. 18. (Didelphops.)
Cretaceous (Laramie); Wyoming.

Didelphodon ferox Marsh.

Marsh, O. C. 1889 D, p. 88, pl. iv, figs. 4, 26-28.
Dana, J. D. 1896 A, p. 853, fig. 1435 *a*, *b*. (Didelphops.)
Marsh, O. C. 1892 B, p. 262, pl. ix, figs. 7, 8. (Didelphops.)
Osborn, H. F. 1891 A, p. 131. (Didelphops.)
1891 B, p. 45. (Didelphops.)
1891 E, p. 606. (Didelphops.)
Roger, O. 1896 A, p. 18. (Didelphops.)
Cretaceous (Laramie); Wyoming.

Didelphodon vorax Marsh.

Marsh, O. C. 1889 D, p. 88, pl. iv, figs. 1-3.
Dana, J. D. 1896 A, p. 853, fig. 1434. (Didelphops.)
Marsh, O. C. 1892 B, p. 262, pl. ix, fig. 1. (Didelphops.)
Osborn, H. F. 1891 A, p. 131. (Didelphops.)
1891 B, p. 45. (Didelphops.)
1891 E, p. 606. (Didelphops.)
1893 B, p. 323, fig. 42. (Didelphops.)
Zittel, K. A. 1893 B, p. 105, fig. 87.
Cretaceous (Laramie); Wyoming.

Cimolestes Marsh. Type *C. incisus* Marsh.

Marsh, O. C. 1889 D, p. 89.
1889 F, p. 179.
Nicholson and Lydekker 1889 A, p. 1277.
Osborn, H. F. 1891 A, p. 131.
1891 B, p. 45.
1891 E, p. 610.
1893 B, p. 325.
Zittel, K. A. 1893 B, p. 105.

Cimolestes curtus Marsh.

Marsh, O. C. 1889 D, p. 89, pl. iv, figs. 8-11.
Osborn, H. F. 1891 A, p. 131.
1891 B, p. 45.
1891 E, p. 606.
Roger, O. 1896 A, p. 18.
Trouessart, E. L. 1898 A, p. 1204.
Cretaceous (Laramie); Wyoming.

Cimolestes incisus Marsh.

Marsh, O. C. 1889 D, p. 89, pl. iv, figs. 12-19.
Dana, J. D. 1896 A, p. 853, fig. 1432 *a-d*.
Marsh, O. C. 1892 B, p. 262, pl. x, fig. 5.
Osborn, H. F. 1891 A, p. 131.
1891 B, p. 45.
1891 E, p. 606.
1893 B, p. 323, fig. 4.
Roger, O. 1896 A, p. 18.
Trouessart, E. L. 1898 A, p. 1204.
Zittel, K. A. 1893 B, p. 106, fig. 89.
Cretaceous (Laramie); Wyoming.

Telacodon Marsh. Type *T. lævis* Marsh.

Marsh, O. C. 1892 B, p. 258.
Osborn, H. F. 1893, B, p. 324.
Zittel, K. A. 1893 B, p. 106.

Telacodon lævis Marsh.

Marsh, O. C. 1892 B, p. 258, pl. ix, figure; pl. x, figure.
Osborn, H. F. 1893 B, p. 323.
Roger, O. 1896 A, p. 19.
Trouessart, E. L. 1898 A, p. 1204.
Zittel, K. A. 1893 B, p. 106, fig. 90.
Cretaceous (Laramie); Wyoming.

Telacodon præstans Marsh.

Marsh, O. C. 1892 B, p. 258, pl. ix, figs. 2, 3; pl. xi fig. 1.
1897 C, p. 521, fig. 90.
Roger, O. 1896 A, p. 19.
Trouessart, E. L. 1898 A, p. 1204.
Walcott, C. D. 1900 A, p. 23.
Zittel, K. A. 1893 B, p. 106, fig. 91.
Cretaceous (Laramie); Wyoming.

TRICONODONTIDÆ.

Marsh, O. C. 1887 A, p. 341.
Cope, E. D. 1889 C, p. 226.
Haeckel, E. 1895 A. p. 470. (Triconodontida.)
Lydekker, R. 1887 A, p. 257.
Marsh, O. C. 1887 A, p. 340. (Spalacotheriidae, Tinodontidæ.)
Nicholson and Lydekker 1889 A, p. 1277.
Osborn, H. F. 1887 F, p. 287.
1888 C, p. 235.
Osborn, H. F. 1888 G, pp. 227, 241.
1893 D. (Triconodonta.)
1898 A, p. 147. (Triconodonta.)
1898 B, p. 177. (Triconodonta.)
Roger, O. 1896 A, p. 12.
Steinmann and Döderlein 1890 A, p. 697.
Trouessart, E. L. 1898 A, p. 1249.
Winge, H. 1893 C, p. 75.
Zittel, K. A. 1893 B, p. 97. (Triconodonta.)

TRICONODONTINÆ nom. nov.

Goodrich, E. S. 1894 A, p. 420. (Amphilestes.)
Osborn, H. F. 1888 G, p. 228. (Amphilestinæ.)
Winge, H. 1893 C, p. 76. (Amphilestidæ.)

TRICONODON Owen. Type *T. mordax* Owen.

Owen, R., 1859, Encyc. Brit., ed. 8., xvii, p. 161.
Cope, E. D. 1888 D, p. 257.
    1889 C, p. 227.
Leche, W. 1896 B, p. 280.
Lydekker, R. 1887 A, p. 258.
Marsh, O. C. 1879 F, p. 215.
    1880 A, p. 237.
Nicholson and Lydekker 1889 A, p. 1277.
Osborn, H. F. 1887 F, p. 287.
    1888 C, p. 235.
    1888 F, p. 1071.
    1888 G, p. 228.
    1893 D, p. 22.
    1898 R, p. 320.
Owen, R. 1871 A, p. 58.
Schlosser, M. 1890 C, p. 242, fig. I, 5.
Scott, W. B. 1892 A, p. 405.
Steinmann and Döderlein 1890 A, p. 697.
Thomas, O, 1892 B.
Trouessart, E. L. 1898 A, p. 1249.
Winge, H. 1893 C, p. 77.
Zittel, K. A. 1893 B, p. 97.

Triconodon bisulcus Marsh.

Marsh, O. C. 1880 F, p. 237.
    1887 A, p. 343.
Roger, O. 1896 A, p. 14.
Trouessart, E. L. 1898 A, p. 1250.
    Jurassic; Wyoming.

PRIACODON Marsh. Type *Tinodon ferox* Marsh.

Marsh, O. C. 1887 A, p. 341.
Nicholson and Lydekker 1889 A, pp. 1275, 1277.
Osborn, H. F. 1887 F, p. 287. (Syn. of Triconodon.)
    1888 G, p. 229.
Trouessart, E. L., 1898 A, p. 1250.
Winge, H. 1893 C, p. 76.
Zittel, K. A. 1893 B, p. 98.

Priacodon ferox Marsh.

Marsh, O. C. 1880 F, p. 236. (Tinodon.)
Cope, E. D. 1889 C, p. 227, pl. viii, fig. 4; text fig. 51. (Triconodon.)
Marsh, O. C. 1887 A, p. 341, pl. x, fig. 9.
Osborn, H. F. 1888 G, p. 229, fig. 10 *a*.
Roger, O. 1896 A, p. 13. (Priacodon, Tinodon.)
Trouessart, E. L. 1898 A, p. 1250. (Syn. of Triconodon ferox Owen.)
Woodward, A. S. 1898 B, p. 259, fig. 152.
    Jurassic; Wyoming.

TINODONTINÆ nom. nov.

Goodrich, E. S. 1894 A, p. 417. (Phascolotherium.)
Marsh, O. C. 1879 F, p. 216. (Tinodontidæ.)
    1887 A, p. 340. (Tinodontidæ.)
Osborn, H. F. 1887 F, p. 288. (Phascolotheriidæ.)
    1888 G, p. 229. (Phascolotheriinæ.)
Owen, R. 1846 B, p. 61. (On Phascolotherium.)
Trouessart, E. L. 1898 A, p. 1249. (Triconodontidæ, in part.)

TINODON Marsh. Type *T. bellus* Marsh.

Marsh, O. C. 1879 F, p. 216.
    1885 C.
    1887 A, p. 340.
Osborn, H. F. 1887 F, p. 288.
    1888 C, p. 235.
    1888 F, p. 1075.
    1888 G, p. 229.
Winge, H. 1893 C, p. 76.
Zittel, K. A. 1893 B, p. 98.

Tinodon bellus Marsh.

Marsh, O. C. 1879 F, p. 216, figure.
    1887 A, p. 340, pl. x, fig. 1.
Osborn, H. F. 1888 G, p. 229, figure.
Roger, O. 1896 A, p. 13.
Trouessart, E. L. 1898 A, p. 1251.
    Jurassic; Wyoming?

Tinodon lepidus Marsh.

Marsh, O. C. 1879 G, p. 398.
    1887 A, p. 343.
Roger, O. 1896 A, p. 13.
Trouessart, E. L. 1898 A, p. 1251.
    Jurassic; Wyoming.

Tinodon robustus Marsh.

Marsh, O. C. 1879 G, p. 397.
    1887 A, p. 343.
Roger, O. 1896 A, p. 13.
Trouessart, E. L. 1898 A, p. 1251
    Jurassic; Wyoming.

SPALACOTHERIINÆ.

Osborn, H. F. 1888 G, p. 229.
Lydekker, R. 1887 A, p. 292. (Spalacotheriidæ.)
Marsh, O. C. 1887 A, p. 340. (Spalacotheriidæ.)
Nicholson and Lydekker 1889 A, p. 1277. (Spalacotheriidæ.)
Owen, R. 1885 C, p. 426. (On Spalacotherium.)

MENACODON Marsh. Type *M. rarus* Marsh.

Marsh, O. C. 1887 A, p. 340.
Ameghino, F. 1896 A, p. 467. (Syn. of Tinodon.)
Osborn, H. F. 1888 F, p. 1075.
1888 G, p. 230.
Winge, H. 1893 C, p. 76.
Zittel, K. A. 1893 B, p. 98. (Syn. of Tinodon.)

Menacodon rarus Marsh.

Marsh, O. C. 1887 A, p. 340, pl. x, figs. 5, 6.
Cope, E. D. 1889 C, p. 227, fig. 52.
Osborn, H. F. 1888 G, p. 230, fig. 21.
Roger, O. 1896 A, p. 13.
Trouessart, E. L. 1898 A, p. 1251.
Walcott, C. D. 1900 A, p. 23.
Jurassic; Wyoming.

AMPHITHERIIDÆ.

Owen, R. 1846 B, p. 29.
Goodrich, E. S. 1894 A, p. 409. (Amphitherium.)
Lydekker, R. 1887 A, p. 269.
1896 B, p. 52.
Marsh, O. C. 1887 A, p. 338. (Diplocynodontidæ.)
Nicholson and Lydekker 1889 A, 1278.
Osborn, H. F. 1887 F, p. 289. (Diplocynodontidæ.)
1888 C, p. 234.
1888 F, p. 1078. (Dicrocynodontidæ.)
1888 G, p. 230.
Owen, R. 1868 A, p. 287. (Genus Amphitherium.)
Roger, O. 1896 A, p. 14.
Trouessart, E. L. 1898 A, p. 1246.
Zittel, K. A. 1893 B, p. 100.

DICROCYNODON Marsh. Type *Diplocynodon victor* Marsh.

Marsh, O. C. in Osborn, H. F. 1888 G, p. 268. (To replace Diplocynodon, preoccupied.)
1880 F, p. 235. (Diplocynodon.)
1887 A, p. 338. (Diplocynodon.)
1889 I, p. 14.
1897 C, p. 508. (Diplocynodon.)
Osborn, H. F. 1887 D. (Diplocynodon.)
1893 D, p. 17.
1897 C, p. 1000.
Schlosser, M. 1890 C, p. 242. (Diacynodon.)
Zittel, K. A. 1893 B, p. 99.

Dicrocynodon victor Marsh.

Marsh, O. C. 1880 F, p. 235, figure. (Diplocynodon.)
1887 A, p. 338, pl. x, fig. 3. (Diplocynodon.)
1897 C, p. 508, fig. 69. (Diplocynodon.)
Osborn, H. F. 1888 G, p. 232, fig. 22. (Diplocynodon.)
Roger, O. 1896 A, p. 14.
Trouessart, E. L. 1898 A, p. 1251.
Woodward, A. S. 1898 B, p. 259, fig. 152
Zittel, K. A. 1893 B, p. 99, fig. 78.
Jurassic; Wyoming.

DOCODON Marsh. Type *D. striatus* Marsh.

Marsh, O. C. 1881 F, p. 512.
1887 A, p. 339.
Osborn, H. F. 1888 G, p. 233.
Zittel, K. A. 1893 B, p. 99.

Docodon striatus Marsh.

Marsh, O. C. 1881 F, p. 512.
1887 A, p. 339, pl. x, fig. 2.
Osborn, H. F. 1888 G, p. 232, fig. 23.
Roger, O. 1896 A, p. 14.
Trouessart, E. L. 1898 A, p. 1252.
Woodward, A. S. 1898 B, p. 259, fig. 152.
Jurassic; Wyoming.

ENNACODON Marsh. Type *Enneodon crassus* Marsh.

Marsh, O. C. 1899 I, p. 15. (To replace *Enneodon* Marsh, preoccupied.)
1887 A, p. 339. (Enneodon.)
Nicholson and Lydekker 1889 A, p. 1277. (Enneodon.)
Osborn, H. F. 1888 G, p. 232. (Enneodon.)
Zittel, K. A. 1893 B, p. 99. (Ennacodon.)

Ennacodon affinis Marsh.

Marsh, O. C. 1887 A, p. 339. (Enneodon.)
Roger, O. 1896 A, p. 14.
Trouessart, E. L. 1898 A, p. 1252.
Walcott, C. D. 1900 A, p. 23. (Enneodon.)
Jurassic; Wyoming.

Ennacodon crassus Marsh.

Marsh, O. C. 1887 A, p. 339, pl. x, fig. 4. (Enneodon.)
Osborn, H. F. 1888 G, p. 232, fig. 24. (Enneodon.)
Roger, O. 1896 A, p. 14.
Trouessart, E. L. 1898 A, p. 1252.
Walcott, C. D. 1900 A, p. 23. (Enneodon.)
Jurassic; Wyoming.

PAURODONTIDÆ.

Marsh, O. C. 1887 A, p. 341.
Osborn, H. F. 1887 F, p. 289. (Peralestidæ, Paurodontidæ.)
1888 G, p. 233. (Peralestidæ.)
Trouessart, E. L. 1898 A, p. 1246. (Amphitheriidæ, in part.)
Woodward, M. F. 1896 A, p. 587. (On Peralestes.)

Paurodon Marsh. Type *P. valens* Marsh.

Marsh, O. C. 1887 A, p. 342.
Ameghino, F. 1899 A, p. 571.
Cope, E. D. 1888 D, p. 257.
1889 C, p. 236.
Osborn, H. F. 1887 F, p. 289.
1888 G, p. 233.
Winge, H. 1898 C, p. 76.

Paurodon valens Marsh.

Marsh, O. C. 1887 A, p. 342, pl. ix, figs. 7, 8.
Osborn, H. F. 1888 G, p. 233, figs. 25 *a*, *b*.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1247.
Walcott, C. D. 1900 A, p. 23.
Jurassic; Wyoming.

DRYOLESTIDÆ.

Marsh, O. C. 1879 G, p. 397.
Ameghino, F. 1896 A, p. 409. (Stylacodontidæ.)
Lydekker, R, 1887 A, p. 289. (Stylodontidæ.)
Marsh, O. C. 1879 E, p. 60. (Stylodontidæ.)
1887 A, p. 334.
Nicholson and Lydekker 1889 A, p. 1410. (Stylodontidæ.)
Osborn, H. F. 1887 F, p. 290. (Stylodontidæ.)
1888 A, p. 298. (Stylacodontidæ.)
1888 C, p. 232. (Stylodontidæ.)
1888 G, p. 236. (Stylacodontidæ.)
Steinmann and Döderlein 1890 A, p. 698. (Stylacodontidæ.)
Trouessart, E. L. 1898 A, p. 1246. (Amphitheriidæ, in part.)

Stylacodon Marsh. Type *S. gracilis* Marsh.

Marsh, O. C. 1879 E, p. 60.
Ameghino, F. 1896 A, p. 454.
Lydekker, R. 1887 A, p. 289 (Stylacodon); p. 290 (Stylodon).
Marsh, O. C. 1885 C.
1887 A, p. 335.
Nicholson and Lydekker 1889 A, p. 1276. (Amblotherium.)
Osborn, H. F. 1887 D. (Stylodon.)
1887 F, p. 290. (Syn.? of Stylodon.)
1888 A, p. 300.
1888 G, p. 207 (Stylodon); pp. 236, 243 (Stylacodon).
Owen, R. 1866 D. (Stylodon, not of Beck, 1837.)
Zittel, K. A. 1893 B, p. 102. (Syn.? of Dryolestes.)

Stylacodon gracilis Marsh.

Marsh, O. C. 1879 E, p. 60.
1887 A, pl. ix, fig. 1.
1897 C, p. 508, fig. 68.
Osborn, H. F. 1888 G, p. 237, fig. 26.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1248.
Jurassic; Wyoming.

Stylacodon validus Marsh.

Marsh, O. C. 1880 F, p. 236.
Roger, O. 1896, A, p. 15.
Trouessart, E. L. 1898 A, p. 1249.
Jurassic; Wyoming.

Dryolestes Marsh. Type *D. priscus* Marsh.

Marsh, O. C. 1878 D.
1879 F, p. 215.
1885 C.
1887 A, pp. 333, 334.
Nicholson and Lydekker 1889 A, pp. 1276, 1277.
Osborn, H. F. 1888 C, p. 235.
1888 G, p. 237. (Syn.? of Phascolestes.)
Schlosser, M. 1890 C, p. 242.
Steinmann and Döderlein 1890 A, p. 698.
Winge, H, 1898 C, p. 76.
Woodward, M. F. 1896 A, p. 587.
Zittel, K. A. 1893 B, p. 102.

Dryolestes arcuatus Marsh.

Marsh, O. C. 1879 G, p. 397.
1887 A, p. 343.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1248.
Jurassic; Wyoming.

Dryolestes gracilis Marsh.

Marsh, O. C. 1881 F, p. 513.
1887 A, p. 343.
1897 C, p. 526.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1248.
Jurassic; Wyoming, Colorado.

Dryolestes obtusus Marsh.

Marsh, O. C. 1880 F, p 237.
1887 A, p. 343.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1248.
Jurassic; Wyoming.

Dryolestes priscus Marsh.

Marsh, O. C. 1878 D.
1879 F, p. 215.
1887 A, p. 334, pl. ix, fig. 2.
Osborn, H. F. 1888 G, p. 238, fig. 28.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1248.
Woodward, A. S. 1898 B, p. 259, fig. 152.
Zittel, K. A. 1893 B, p. 102, fig. 81.
Jurassic; Wyoming.

Dryolestes tenax Marsh.

Marsh, O. C. 1889 D, p. 87.
Osborn, H. F. 1891 A, p. 131.
1891 B, p. 45.
1891 E, p. 606.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1248.
Cretaceous (Laramie); Wyoming.

Dryolestes vorax Marsh.

Marsh, O. C. 1879 F, p. 215,
1887 A, p. 334, pl. ix, figs. 3, 4.
Osborn, H. F. 1888 G, p. 237, fig. 27.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1248.
Woodward, A. S. 1898 B, p. 259, fig. 152.
Jurassic; Wyoming.

ASTHENODON Marsh. Type *A. segnis* Marsh.

Marsh, O. C. 1887 A, p. 336, pl. ix, figs. 6, 7.
Nicholson and Lydekker 1889 A, p. 1276.
Osborn, H. F. 1888 A, p. 300.
1888 F, p. 1071.
1888 G, p. 238.
Winge, H. 1893 C, p. 76.
Zittel, K. A. 1893 B, p. 102.

Asthenodon segnis Marsh.

Marsh, O. C. 1887 A, p. 336, pl. ix, figs. 6, 7
Osborn, H. F. 1888 G, p. 238, figs. 29, A, B.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1248.
Woodward, A. S. 1898 B, p. 259, fig. 152.
Jurassic; Wyoming.

LAODON Marsh. Type *L. venustus* Marsh.

Marsh, O. C. 1887 A, p. 337.
Ameghino, F. 1899 A, p. 571.
Nicholson and Lydekker 1889 A, p. 1276.
Osborn, H. F. 1888 G, p. 238.
Winge, H. 1893 C, p. 76.

Laodon venustus Marsh.

Marsh, O. C. 1887 A, p. 337, pl. ix, fig. 5.
Osborn, H. F. 1888 G, p. 238, fig. 30.
Roger, O. 1896 A, p. 15.
Trouessart, E. L. 1898 A, p. 1248.
Walcott, C. D. 1900 A, p. 23.
Woodward, A. S. 1898 B, p. 259, fig. 152.
Jurassic; Wyoming.

DIDELPHIDÆ.

Ameghino, F. 1889 A, p. 277.
Baird, S. F. 1857 A, p. 231. (Didelphydæ, Peratheridæ.)
Baur, G. 1885 K, p. 475.
Cope, E. D. 1889 R, p. 876.
Flower, W. H. 1883 D, p. 380.
Flower and Lydekker 1891 A, p. 133.
Gegenbaur, C. 1898 A.
Haeckel, E. 1895 A, p. 481. (Didelphyida.)
Lydekker, R. 1887 A, p. 278.
1896 B, p. 55.
Nicholson and Lydekker 1889 A, p. 1280.
Osborn, H. F. 1893 G, p. 497.
1900 C, p. 566.
Owen, R. 1838 A.
1839 A.
Parker, W. K. 1885 A, p. 59.
Roger, O. 1896 A, p. 18.
Schlosser, M. 1889 A.
Schmidt, O. 1886 A, p. 97.
Tomes, C. S. 1898 A, p. 562.
Winge, H. 1893 C, p. 89.
Wyman, J. 1872 A.
Zittel, K. A. 1893 B, p. 105.

DIDELPHIS[1] Linnæus. Type *D. marsupialis* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 54.
Ameghino, F. 1889 A, p. 277.
Aymard, A., 1848, Mem. Soc. Acad. du Puy. (Peratherium.)
Baird, S. F. 1857 A, p. 232.
Bensley, B. A. 1900 A, p. 559.
Burmeister, H. 1879 B, p. 183.
Cope, E. D. 1873 T, p. 1. (Herpetotherium, type *H. fugax*.)
1873 CC, p. 4. (Embassis, type *E. alternans*, Peratherium.)
1874 B, pp. 465, 468 (Embassis, Herpetotherium); p. 472 (Didelphys).
1874 P, p. 23. (Herpetotherium.)
1879 A, p. 45. (Didelphys.)
1884 O, p. 37 (Didelphys); pp. 260, 268, 788, 789 (Peratherium).
1884 Y, p. 687. (Peratherium.)
Coues, E. 1872 A.
Emery, C. 1897 C.
Flower, W. H. 1885 A.
Flower and Lydekker 1891 A, p. 134.
Gaudry, A. 1878 B, p. 11.
Kükenthal, W. 1891 B, p. 658, figs. 1-8.
Lydekker, R. 1887 A, p. 278.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1887 A, p. 1458.
Osborn, H. F. 1892 I.
Owen, R. 1838 A.
1843 A, pp. 57, 72.
1866 A, p. 330, *et seq.*
1868 A, p. 288.
Pictet, F. J. 1853 A, p. 394.
Röse, C. 1892 E, p. 641.
Schlosser, M, 1887 B, p. 145. (Peratherium.)
1890 C, p. 244.
1890 D.
Thomas, O. 1892 B.
Trouessart, E. L. 1898 A, p. 1230.
Weil, R. 1899 A, p. 103, pls. ii, iii.
Zittel, K. A. 1893 B, p. 106.

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[1] This is the original orthography. The form *Didelphys* is usually employed by writers.

Didelphis alternans (Cope).

Cope, E. D. 1873 CC, p. 7. (Embassis.)
1874 B, p. 468. (Embassis.)
1884 O, pp. 794, 798, pl. lxii, figs. 22-24. (Peratherium.)
Matthew, W. D. 1899 A, p. 52.
Roger, O. 1896 A, p. 20.
Trouessart, E. L. 1898 A, p. 1232.
Oligocene (White River); Colorado.

Didelphis comstocki (Cope).

Cope, E. D. 1884 O, p. 269 (Peratherium comstocki); pl. xxv *a*, fig. 15. P. comstockianum).
Matthew, W. D. 1899 A, p. 31.
Roger, O. 1896 A, p. 19.
Trouessart, E. L. 1898 A, p. 1230.
Eocene (Wasatch); Wyoming.

Didelphis fugax (Cope).

Cope, E. D. 1873 T, p. 1. (Herpetotherium fuzax, *err. typ.*)
1873 CC, pp. 5, 6. (Herpetotherium.)
1874 B, p. 467. (Herpetotherium.)
1874 P, p. 23. (Herpetotherium.)
1884 O, p. 794, pl. lxii, figs. 1-9. (Peratherium.)
1884 Y, p. 687, fig. 1. (Peratherium.)
Matthew, W. D. 1899 A, p. 52.
Roger, O. 1896 A, p. 21.
Trouessart, E. L. 1898 A, p. 1232.
Oligocene (White River); Colorado.

Didelphis huntii (Cope).

Cope, E. D. 1873 CC, p. 5. (Herpetotherium.)
1873 CC, pp. 5, 6 (Herpetotherium stevensoni); p. 8 (Miothen gracile).
1874 B, p. 466 (Herpetotherium huntii); p. 467 (H. stevensoni); p. 470 (Domnina gracilis).
1884 O, pp. 794, 796, pl. lxii, figs. 12-16. (Peratherium.)
1887 Y, p. 687. (Peratherium.)
Matthew, W. D. 1899 A, p. 52.
Roger, O. 1896 A, p. 21.
Trouessart, E. L. 1898 A, p. 1232.
Oligocene (White River); Colorado.

Didelphis marginalis (Cope).

Cope, E. D. 1873 CC, pp. 5, 6. (Herpetotherium.)
Cope, E. D. 1874 B, p. 468. (Embassis.)
1884 O, pp. 794, 798, pl. lxii, figs. 19-21. (Peratherium.)
Matthew, W. D. 1899 A, p. 52.
Roger, O. 1896 A, p. 21.
Trouessart, E. L. 1898 A, p. 1232.
Oligocene (White River); Colorado.

Didelphis pygmæa Scott.

Scott, W. B. 1884 A, p. 442, figure.
Matthew, W. D, 1899 A, p. 52.
Roger, O. 1896 A, p. 21.
Trouessart, E. L. 1898 A, p. 1232.
Oligocene (White River); Colorado.

Didelphis scalaris (Cope).

Cope, E. D. 1873 CC, pp. 5, 7. (Herpetotherium.)
1874 B, p. 467. (Herpetotherium.)
1884 O, pp. 794, 797, pl. lxii, figs. 17, 18. (Peratherium.)
Matthew, W. D. 1899 A, p. 52.
Roger, O. 1896 A, p. 21.
Trouessart, E. L. 1898 A, p. 1232.
Oligocene (White River); Colorado.

Didelphis tricuspis (Cope).

Cope, E. D. 1873 CC, p. 5. (Herpetotherium.)
1874 B, p. 466. (Herpetotherium.)
1884 O, pp. 794, 796, pl. lxii, figs. 10, 11. (Peratherium.)
Roger, O. 1896 A, p. 21.
Trouessart, E. L. 1898 A, p. 1232.
Oligocene; Colorado.

Didelphis virginiana Kerr.

Kerr, Robert, 1792, Animal Kingdom, i, No. 386. (*Fide* J. A. Allen.)
Baird, S. F. 1857 A. p. 232.
Coues, E. 1872 A.
Emmons, E. 1858 A, p. 78. ("Insectivorous mammal.")
Leidy, J. 1860 B, p. 116, pl. xxiii, fig. 2.
1869 A, p. 410.
Trouessart, E. L. 1898 A, p. 1233. (Subsp. of D. marsupialis.)
Wyman, J. 1872 A.
Recent; eastern North America: Pleistocene; South Carolina.

Superorder MONODELPHIA.

Cope, E. D. 1889 R, p. 874.
1898 B, p. 104.
Flower, W. H. 1883 A.
1883 D, p. 383. (Eutheria, or Monodelphia.)
1885 A, p. 6. (Eutheria, Monodelphia.)
Gadow H. 1898 A, p. 41. (Eutheria.)
Gill, T. 1872 A, p. 295.
1872 B, p. 46.
Haeckel, E. 1895 A, p. 487. (Placentalia.)
Huxley, T. H. 1872 A, p. 281.
1880 B. (Monodelphia, Eutheria.)
Nicholson and Lydekker 1889 A, p. 1289. (Eutheria.)
Osborn, H. F. 1893 A, p. 391. (Eutheria.)
1898 L, p. 456. (Eutheria.)
Woodward, A. S. 1898 B, p. 266. (Eutheria.)

Order BRUTA Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 33.

Unless otherwise indicated, the following authorities employ the name *Edentata* for this order.

Ameghino, F. 1889 A, p. 653.
Baur, G. 1885 K, p. 477.
Blainville, H. M. D. 1839 A. ("Edentés.")
1839 B. ("Edentés.")

Blainville, H. M. D. 1839 C, p. 113.
1864 A, iv, DD. pls. i–vi.
Broom, R. 1897 A.
Burmeister, H. 1866 B, p. 148.
1871 A.
1871 B.
1879 B, p. 275.
Cope, E. D. 1880 B, p. 454.
1884 X.
1887 S, p. 342.
1888 I, p. 4.
1888 K, p. 163.
1889 C.
1889 P.
1889 R, p. 875.
1897 A, p. 323.
1898 B, p. 105.
Cuvier, G, 1834 A, viii, pt. i, pp. 129–270.
Filhol, H. 1894 A.
Flower, W. H. 1869 A, p. 265.
1882 A.
1883 A.
1883 D, p. 383.
1885 A.
Flower and Lydekker 1891 A, p. 176.
Gadow, H. 1898 A, p. 41.
Gaudry, A. 1878 B, p. 192.
Gegenbaur, C. 1898 A.
Gervais, P. 1873 A.
Gill, T. 1872 A, p. 304. (Bruta.)
1872 B, pp. 23, 50. (Bruta.)
Gill and Coues 1877 A, p. 1069.
Gray, J. E. 1869 A, p. 361. (Bruta.)
Haeckel, E. 1895 A, pp. 490, 511.
Hay, O. P. 1899 F, p. 682. (Bruta.)
Huxley, T. H. 1872 A, p. 282. (Edentata, or Bruta.)
Leche, W. 1893 A, p. 527.
1895 A, p. 108.
1897 A.
Leidy, J. 1871 C, p. 365.
Marsh, O. C. 1877 E.
1897 B, p. 144.
Lydekker, R. 1896 B.
Nicholson and Lydekker 1889 A, 1289.
Osborn, H. F. 1888 F, p. 1067.
1893 D.
1893 G, p. 493.
1897 F, p. 611.
Owen, R. 1840 F, p. 85. (Bruta, or Edentata.)
1842 D.
1845 B, p. 317.
1851 C, p. 740.
1860 D.
1866 B, p. 393.
1868 A, p. 272. (Bruta.)
Parker, W. K. 1868 A, p. 199.
1885 A, p. 90.
1886 A.
Parsons, F. G. 1899 A.
1900 A.
Rapp, W. 1852 A.
Reh, L. 1895 A.
Roemer, F. 1892 A.
1893 A.
Röse, C. 1892 D, p. 495.
Roger, O. 1896 A, p. 90.
Schlosser, M. 1890 A.
1890 C.
1890 D.
1892 A.
1893 A.
Schmidt, O. 1886 A, p. 110.
Slade, D. D. 1888 A, p. 242.
1890 A.
Steinmann and Döderlein 1890 A, p. 786.
Thomas, O. 1888 A.
Tomes, C. S. 1898 A, p. 370.
Trouessart, E. L. 1898 A, p. 1094.
Turner, H. N. 1848 A.
Weber, Max 1893 A.
1893 B.
Weyhe, — 1875 A, p. 105.
Woodward, A. S. 1898 B, p. 277.
Wortman, J. L. 1886 A, p. 408. (Bruta.]
1896 B, p. 259.
1897 B.
Zittel, K. A. 1893 B, p. 117.

Suborder TÆNIODONTA Cope.

Cope, E. D. 1876 C.
Ameghino, F. 1897 A, pp. 83, 89.
Cope, E. D. 1877 K, pp. 85, 157.
1882 E, p. 146.
1882 L, p. 72.
1883 I, p. 79.
1884 O, pp. 186, 187, 789.
1887 S, p. 343.
1888 K.
1897 A, p. 322.
1898 B, p. 115.
Marsh, O. C. 1875 C, p. 221. (Tillodontia, in part.)
Marsh, O. C. 1897 B. (>Stylinodontia.)
Osborn, H. F. 1897 F, p. 611. (Ganodonta.)
1898 A, p. 146. (Ganodonta.)
Rütimeyer, L. 1891 A.
Trouessart, E. L. 1898 A, p. 667. (Ganodonta.)
Woodward, A. S. 1898 B, p. 277.
Wortman, J. L. 1885 A, p. 298.
1896 B, p. 259. (Ganodonta.)
1897 A. (Ganodonta.)
1897 B. (Ganodonta.)
Zittel, K. A. 1893 B, p. 508. (Tillodontia, in part.)

CONORYCTIDÆ.

Wortman, J. L. 1896 B, p. 260.
Matthew, W. D. 1897 C, p. 262.
Trouessart, E. L. 1898 A, p. 667.
Wortman, J. L. 1897 B, pp. 95, 109.

CONORYCTES Cope. Type *C. comma* Cope.

Cope, E. D. 1881 H, p. 486.
1881 U, p. 829.
1883 E.
1883 Q, p. 168.
1883 EE.
1884 AA, p. 795. (Hexodon, type *H. molestus.*)
1884 O, p. 198.
1888 CC, p. 316.
Nicholson and Lydekker 1889 A, p. 1453.
Osborn and Earle 1895 A, p. 40.
Pavlow, M. 1887 A.
Schlosser, M. 1885 A, p. 684.
1886 B, p. 37.
Scott, W. B. 1892 B, p. 323.
1892 D, p. 80.
Trouessart, E. L. 1898 A, p. 667.
Wortman, J. L. 1896 B, p. 259.
Wortman, J. L. 1897 B, p. 101, 109.
Zittel, K. A. 1893 B, p. 510.

Conoryctes comma Cope.

Cope, E. D. 1881 H, p. 486.
1881 U, p. 829.
1884 AA, p. 796, fig. 3. (Hexodon molestus.)
1884 O, pp. xxxv, 198, pl. xxiii *e*, figs. 1–5; pl. xxv *c*, figs. 3, 4.
1888 CC, pp. 303, 317.
Matthew, W. D. 1897 C, p. 264.
1899 A, p. 29.
Roger, O. 1896 A, p. 89.
Schlosser, M. 1886 B, p. 37.
Trouessart, E. L. 1898 A, p. 667.
Wortman, J. L. 1897 B, p. 101, fig. 36.
Eocene (Puerco); New Mexico.

ONYCHODECTES Cope. Type *O. tisonensis* Cope.

Cope, E. D. 1888 CC, p. 317.
Ameghino, F. 1897 A, p. 84.
Matthew, W. D. 1897 C, p. 266.
Osborn and Earle 1895 A, p. 40.
Scott, W. B. 1892 B, p. 323.
1892 D, p. 80.
Wortman, J. L. 1896 B, p. 258.
1897 B, pp. 97, 109.
Zittel, K. A, 1893 B, p. 510.

Onychodectes rarus Osb. and Earle.

Osborn and Earle 1895 A, p. 42, fig. 13.
Matthew, W. D. 1897 C, p. 264.
1899 A, p. 28.
Roger, O. 1896 A, p. 89.
Trouessart, E. L. 1898 A, p. 667.
Wortman, J. L. 1897 B, p. 100.
Eocene (Puerco); New Mexico.

Onychodectes tisonensis Cope.

Cope, E. D. 1888 CC, p. 318, pl. v, figs. 8, 9.
Matthew, W. D. 1897 C, p. 264.
1890 A, p 28.
Osborn and Earle 1895 A, p. 40, fig. 12.
Roger, O. 1896 A, p. 89.
Trouessart, E. L. 1898 A, p. 667.
Wortman, J. L. 1897 B, p. 97, figs. 31–34.
Eocene (Puerco); New Mexico.

STYLINODONTIDÆ.

Marsh, O. C. 1875 C, p. 221.
Ameghino, F. 1897 A, p. 89.
Cope, E. D. 1876 C, p. 39. (Ectoganidæ, Calamodontidæ.)
1877 K, p. 157. (Ectoganidæ.)
1884 O, p. 188. (Ectoganidæ, Calamodontidæ.)
1888 CC, p. 310. (Hemiganidæ.)
Flower, W. H. 1876 C, p. 124. (Stylinodontidæ, Ectoganidæ.)
Marsh, O. C. 1876 G, p. 60.
1877 E.
1897 B, p. 137.
Matthew, W. D. 1897 C, p. 262.
Nicholson and Lydekker 1889 A, p. 1410. (Calamodontidæ,)
Roger, O. 1896 A, p. 88. (Calamodontidæ.)
Wortman, J. L. 1896 B, p. 260.
1897 B, pp. 95, 109.
Zittel, K. A. 1893 B, p. 508.

WORTMANIA Hay. Type *Hemiganus otariidens* Cope.

Hay, O. P. 1899 A, p. 598.
Cope, E. D. 1885 L. (Hemiganus, in part.)
1888 CC, p. 311. (Hemiganus, in part.)
Nicholson and Lydekker 1889 A, p. 1458. (Hemiganus, in part.)
Trouessart, E. L. 1898 A, p. 668. (Hemiganus.)
Wortman, J. L. 1897 B. (Hemiganus.)
Zittel, K. A. 1893 B, p. 510. (Hemiganus, in part.)

Wortmania otariidens (Cope.)

Cope, E. D. 1885 L, p. 493. (Hemiganus.)
Cope, E. D. 1888 CC, p. 311, pl. iv; pl. v, figs. 1–7. (Hemiganus.)
Hay, O. P. 1899 A, p. 598. (Wortmania.)
Matthew, W. D. 1897 C, p. 264. (Hemiganus.)
1899 A, p. 28. (Hemiganus.)
Roger, O. 1896 A, p. 89. (Hemiganus.)
Trouessart, E. L. 1898 A, p. 668. (Hemiganus.)
Wortman, J. L. 1897 B, pp. 64, 67, figs. 2, 3. (Hemiganus.)
Zittel, K. A. 1893 B, p. 510. (Hemiganus.)
Eocene (Puerco); New Mexico.

PSITTACOTHERIUM Cope. Type *P. multifragum* Cope.

Cope, E. D. 1882 P, p. 157.
Ameghino, F. 1897 A, p. 89.
Cope, E. D. 1882 E, p. 191.
1882 CC. (Hemiganus, type *H. vultuosus*.)
1883 E.
1883 I, p. 77.
1884 O, pp. 195, 738 (Psittacotherium); explan. pl. xxiii *c* (Hemiganus).
1885 L. (Hemiganus.)
1887 F, p. 469.
1888 I, p. 4.
1888 CC, p. 311. (Hemiganus.)
1889 C.
1897 A, p. 322.
Nicholson and Lydekker 1889 A, p. 1409 (Psittacotherium); p. 1458 (Hemiganus).
Osborn, H. F. 1897 F, p. 611.
1898 A, p. 145.
Schlosser, M. 1890 C, p. 252.
1892 A, p. 225.
Scott, W. B. 1892 B, p. 323. (Hemiganus.)
1892 D, p. 80. (Hemiganus.)
Steinmann and Döderlein 1890 A, p. 729. (Hemiganus.)
Wortman, J. L. 1896 B. (Psittacotherium, Hemiganus.)
1897 B, pp. 65, 67 (type of Hemiganus=P. multifragum); p. 109 (Hemiganus, Psittacotherium).
Zittel, K. A. 1893 B, p. 508. (Psittacotherium, Hemiganus.)

Psittacotherium multifragum Cope.

Cope, E. D. 1882 P, p. 157.
1882 E, p. 191 (P. multifragum); p. 192 (P. aspasiæ).
1882 CC. (Hemiganus vultuosus.)
1884 O, p. 196, pl. xxiii *c*, figs. 7–12 (Hemiganus vultuosus); pl. xxiv *b*, fig. 2; pl. xxiv *b*, figs. 3, 4 (P. aspasiæ).
1885 L. (Hemiganus vultuosus.)
1887 F, p. 469. (P. multifragum, P. megalodus.)
1888 I, p. 4, fig. 1.
1888 CC, p. 302 (P. multifragum, P. aspasiæ, P. megalodus); p. 303 (Hemiganus vultuosus).
1889 C, p. 262.
Hay, O. P. 1899 A, p. 593.
Matthew, W. D. 1897 C, pp. 264, 320.
1899 A, p. 29.
Osborn and Earle 1895 A, p. 42.
Roger, O. 1896 A, p. 88 (P. multifragum, P. aspasiæ, P. megalodus); p. 89 (Hemiganus vultuosus).
Wortman, J. L. 1896 B, p. 259.
1897 B, p. 65 *et seq.*, figs. 1, 4, 6–9, 11–13, 15–20; p. 67 (Hemiganus vultuosus, a synonym); p. 71 (P. megalodus and P. aspasiæ, synonyms).
Zittel, K. A. 1893 B, p. 508, fig. 423 (P. multifragum); p. 510 (Hemiganus vultuosus).
Eocene (Puerco); New Mexico.

CALAMODON Cope. Type *C. simplex* Cope.

Cope, E. D. 1874 O, p. 5.
1875 A.
1875 C, p. 23.
1876 C.
1877 K, p. 162.
1882 E, p. 146.
1882 L.
1884 O, p. 188.
1888 I, p. 5.
1889 C, p. 262.
1894 I, p. 594. (Calamodon, or Conicodon.)
1897 A, p. 322.
Flower and Lydekker 1891 A, p. 442.
Major, Fors. 1893 A, p. 209.
Marsh, O. C. 1875 A, p. 151.
Nicholson and Lydekker 1889 A, p. 1410.
Osborn, H. F 1897 F.
Rütimeyer, L. 1891 A, p. 126.
Schlosser, M. 1890 C, p. 252.
Steinmann and Döderlein 1890 A, p. 730.
Wortman, J. L. 1897 B, pp. 88, 110.
Zittel, K. A. 1893 B, p. 509.

Calamodon arcamœnus Cope.

Cope, E. D. 1874 O, p. 6.
Cope, E. D. 1875 C, p. 24.
1877 K, p. 163, pl. xli, figs. 13–17; pl. xlii, figs. 1–5; pl. xliv, fig. 1.
Matthew, W. D. 1899 A, p. 32.
Roger, O. 1896 A, p. 89.
Zittel, K. A. 1893 B, p. 509. (Stylinodon.)
Eocene (Wasatch); New Mexico.

Calamodon simplex Cope.

Cope, E. D. 1874 O, p. 5.
1875 C, p. 24.
1877 K, p. 166, pl. xlii, figs. 6–8; pl. xliii; pl. xliv, figs. 2–5.
1882 E, p. 147.
1884 O, p. 189, pl. xxiv *b*, fig. 1; ? pl. xxiv *e*, figs. 20–22.
1888 I, p. 5, fig. 2.
1889 C, p. 262, fig. 85.
King, C. 1878 A, p. 377.
Matthew, W. D. 1899 A, p. 32.
Osborn and Wortman 1892 A, p. 83.
Roger, O. 1896 A, p. 89.
Wortman, J. L. 1897 B, p. 89, figs. 22–24.
Zittel, K. A. 1893 B, p. 509. (Stylinodon.)
Eocene (Wasatch); Wyoming, New Mexico.

STYLINODON Marsh. Type *S. mirus* Marsh.

Marsh, O. C. 1874 C, p. 532.
Ameghino, F. 1897 A, p. 89.
Cope, E. D. 1875 A.
Flower and Lydekker 1891 A, p. 442.
Marsh, O. C. 1875 A.
1877 E.
1897 B.
Nicholson and Lydekker 1889 A, p. 1410.

Osborn, H. F. 1897 F, p. 612.
Wortman, J. L. 1887 F, p. 290.
1896 B, p. 259.
1897 A, p. 110.
Zittel, K. A. 1893 B, p. 509.

Stylinodon cylindrifer (Cope).

Cope, E. D. 1881 D, p. 184. (Calamodon.)
1884 O, p. 192, pl. xxiv *a*, figs. 15, 16. (Calamodon.)
Matthew, W. D. 1899 A, p. 36.
Roger, O. 1896 A, p. 89. (Calamodon.)
Trouessart, E. L. 1898 A, p. 669.
Wortman, J. L. 1897 B, p. 92, fig. 25.
Zittel K. A. 1893 B, p. 509.
Eocene (Wind River, Bridger); Wyoming.

Stylinodon mirus Marsh.

Marsh, O. C. 1874 C, p. 532.
King, C. 1878 A, p. 404.
Marsh, O. C. 1897 B, p. 138, figs. 1-7.
Matthew, W. D. 1899 A, p. 43.
Roger, O. 1896 A, p. 89. (Calamodon.)
Trouessart, E. L. 1898 A, p. 669.
Wortman, J. L. 1897 B, p. 93, figs. 26-30.
Eocene (Bridger); Wyoming.

ECTOGANUS Cope. Type *E. gliriformis* Cope.

Cope, E. D. 1874 O, p. 4.
1875 C, p. 23.
1876 A, p. 3.
1877 K, p. 158.
1897 A, p. 322.
Wortman J. L. 1896 B, p. 259.
1897 B, p. 88.
Zittel, K. A. 1893 B, p. 510.

Ectoganus gliriformis Cope.

Cope, E. D. 1874 O, p. 4.
1877 K, p. 160, pl. xli, figs. 1-12.
King, C. 1878 A, p. 377.
Roger, O. 1896 A, p. 89.
Eocene; New Mexico.

Ectoganus novomehicanus Cope.

Cope, E. D. 1874 O, p. 6. (Calamodon.)
1875 C, p. 24. (Calamodon.)
1877 K, p. 159, pl. xl, figs. 34-39.
Matthew, W. D. 1899 A, p. 32. (Calamodon.)
Roger, O. 1896 A, p. 89.
Eocene (Wasatch); New Mexico.

DRYPTODON Marsh. Type *D. crassus* Marsh.

Marsh, O. C. 1876 H, p. 408.
1877 E.
1897 B, 138.
Trouessart, E. L. 1898 A, p. 669.
Wortman, J. L. 1897 B, p. 88, footnote 4.
Zittel K. A. 1893 B, p. 510.

Dryptodon crassus Marsh.

Marsh, O. C. 1876 H, p. 408.
King, C. 1878 A, p. 377.
Matthew, W. D. 1899 A, p. 32.
Roger, O. 1896 A, p. 89.
Trouessart, E. L. 1898 A, p. 669.
Eocene (Wasatch); New Mexico.

Suborder XENARTHRA.

Ameghino, F. 1889 A, p. 661. (Gravigrada.)
Burmeister, H. 1879 B, p. 279 (Phyllophaga); p. 387 (Effodientia).
Cope, E. D. 1889 C. (Xenarthri.)
1889 P, p. 657.
Flower, W. H. 1883 A. (Pilosa.)
Flower and Lydekker 1891 A, p. 179. (Pilosa.)
Gadow, H. 1898 A, p. 41.
Gill, T. 1872 B, pp. 23, 24. (Vermilingua, Tardigrada, Loricata.)
Haeckel E. 1895 A, p. 490. (Bradytheria.)
Roger, O. 1896 A, p. 91.
Trouessart, E. L. 1898 A, p. 1094.
Wortman, J. L. 1897 B, p. 109.
Zittel, K. A. 1893 B, p. 124.

Dr. Gill, in Standard Natural History, vol. v, 1884, p. 66, recognized the peculiar character of the vertebræ of this group and employed the adjective term *xenarthral;* but he did not formally name the group.

MEGATHERIIDÆ.

Ameghino, F. 1889 A, p. 665 (Megatheridæ); p. 690 (Megalonychidæ); p. 740 (Mylodontidæ).
1894 A, p. 397. (Gravigrada.)
Burmeister, H. 1866 B, p. 149. (<Gravigrada.)
Claypole, E. W. 1891 A.
Cope, E. D. 1889 C.
1889 P, p. 658.
1889 R, p. 876.
Flower, W. H. 1882 A.
1883 D, p. 384.
Flower and Lydekker 1891 A, p. 158.
Gill, T. 1872 B, p. 24.
Lönnberg, E. 1899 A. (Mylodontidæ.)
Lydekker, R. 1887 A, p. 85.
1894 A, p. 70.
1896 B, p. 102. (Megalotheriidæ.)
Nicholson and Lydekker 1889 A, p. 1295.
Roger, O. 1896 A, p. 91 (Megatheridæ); p. 93 (Megalonychidæ); p. 97 (Mylodontidæ).
Schlosser, M. 1890 C, p. 251.
Steinmann and Döderlein 1890 A, p. 789.
Trouessart, E. L. 1898 A, p. 1098 (Megalonychidæ); p. 1107 (Megatheriidæ).
Zittel, K. A. 1893 B, p. 130 (Megatheridæ); p. 133 (Megalonychidæ); p. 136 (Mylodontidæ).

MEGATHERIUM Cuvier. Type *M. americanum* Cuvier.

Cuvier, G., 1796, Mag. Encycl., i. (*Fide* Agassiz.)
Adam, W. 1834 A.
Agassiz, L. 1862 C.
1863 A.
1863 B.
Ameghino, F. 1886 A, p. 178.
1889 A, p. 666.
Blainville, H. M. D. 1839 A, p. 67.
1839 C, p. 114.
1864 A, iv, EE, p. 39, pls. i–iv.
Bru, D. J. B. 1804 A.
Buckland, W. 1837 A, i, p. 112.
Burmeister, H. 1866 B, p. 150.
1870 A, p. 381.
1873 A.
1879 B, p. 285.
1888 B.
Clift, W. 1835 A.
Cope, E. D. 1889 C, p. 188.
1889 P, p. 660.
Couper, J. H. 1842 A.
Cuvier, G., 1798, Table Élemént., p. 146.
1804 B, pp. 376–387, pls. xxiv, xxv.
1834 A, viii, pt. i, pp. 531–570, pl. ccxvii.
Dawkins, W. B. 1870 A, p. 283.
De Kay, J. E. 1842 C, p. 98.
Desor, E. 1852 A, p. 58.
Flower, W. H. 1882 A.
1883 D, p. 885.
Flower and Lydekker 1891 A, p. 185.
Gervais, P. 1839 A.
1873 A, p. 464.
Giebel, C. G. 1847 A, p. 111.
Harlan, R. 1825 A, p. 199.
Holmes, F. S. 1858 B.
Koken, E. 1888 C, p. 5.
Leidy J. 1855 B, pp. 49, 59.
Lund, P. W. 1841 A, p. 78.
1842 A.
Lydekker R. 1887 A, p. 86.
1894 A, p. 71.
1896 B, p. 102. (Megalotherium.)
Nicholson and Lydekker 1889 A, p. 1295.
Owen, R. 1840 B.
1840 F, pp. 64, 85.
1842 D.
1843 B.
1845 B, p. 383, pls. lxxxiii, lxxxiv.
1847 C, p. 66.
1851 C.
1852 A.
1855 B.
1856 B.
1858 C.
1860 D.
1866 B, p. 402.
1868 A, p. 274.
Pander and d'Alton 1818 A.
Pictet, F. J. 1853 A, p. 264, fig. 216,
Schmidt, O. 1886 A, p. 115.
Steinmann and Döderlein 1890 A, p. 739.
Trouessart, E. L. 1898 A, p. 1108.
Woodward, A. S. 1898 B, p. 279.
Zittel, K. A. 1893 B, p. 131.

Megatherium americanum Cuvier.

Cuvier, G., 1800, in Shaw's "General Zoology," i, p. 165.
Ameghino, F. 1889 A, p. 668, pl. xli, fig. 4; pl. lxxxi, figs. 1–3.
Blainville, H. M. D. 1864 A.
Burmeister, H. 1866 B, p. 150, pl. v.
1873 A, pl. xi.
1879 B, p. 321.
1889 A, p. 27, pl. xi, figs. 7, 8.
Desmarest, A. G., 1822, Mammalogie, p. 365. (M. cuvieri.)
Flower and Lydekker 1891 A, p. 185, figs. 60–62.
Gervais and Ameghino 1880 A, p. 135.
Giebel, C. G. 1847 A, p. 111. (M. cuvieri.)
Leidy, J. 1877 A, p. 218, pl. xxxiv, figs. 42, 43. (With doubt.)
Lydekker, R. 1887 A, p. 86.
1894 A, p. 73, pls. xlv, xlvi.
Owen, R. 1840 F, p. 100, pls. xxx–xxxii.
1851 C.
1855 B, pls. xxii–xxvii.
1856 B, pls. xxi–xxvi.
Quenstedt, F. A. 1852 A, p. 44, pl. iii, fig. 13.
Reinhardt, J. 1875 A, pl. iv, figs. 6, 7.
Roger, O. 1896 A, p. 91.
Trouessart, E. L. 1898 A, p. 1109.
Zittel, K. A. 1893 B, p. 132, figs. 104, 107, 108.

This species has been recorded with doubt from the phosphate beds of South Carolina. The species had previously been known only from South America.

Megatherium mirabile Leidy.

Leidy, J. 1852 H, p. 117.
Cooper, W. 1824 A, p. 114, pl. viii. ("Megatherium.")
1828 A, p. 267. ("Megatherium.")
Cope, E. D. 1889 P, p. 660.
Couper, J. H. 1842 A, p. 216.
1846, in Hodson, W. B. 1846 A.
Cuvier, G. 1834 A, viii, p. 338. ("Megatherium.")
De Kay, J. E. 1842 C, p. 98. (M. cuvieri.)
Habersham, J., in Hodson, W. B. 1846 A, p. 25. (M. cuvieri.)
Harlan, R. 1825 A, p. 200. (M. cuvieri.)
1834 B, p. 63. (M. cuvieri.)
1835 B, p. 269. (M. cuvieri.)
1842 B, p. 143. ("Megatherium.")
1843 B, p. 70. (Megatherium.)
Hodson, W. B. 1846 A.
Holmes, F. S. 1849 A, p. 197. ("Megatherium.")
Leidy, J. 1854 A, p. 10.
1855 B, pp. 49, 59, pl. xv.
1860 B, p. 111, pl. xx, figs. 8, 8*a*.
1869 A, p. 411.
Lydekker, R. 1887 A, p. 90.
Lyell, C. 1843 B, p. 128. ("Megatherium.")
1844 A, p. 323. ("Megatherium.")
Mitchell, S. L. 1824 A, pl. vi, figs. 12, 13. ("Megatherium.")
Roger, O. 1896 A, p. 92.
Trouessart, E. L. 1898 A, p. 1110.
T. R. D. 1839 A. ("Megatherium.")
Wyman, J. 1856 A.
Zittel, K. A. 1893 B, p. 132.

Pleistocene; Georgia, South Carolina.

MEGALONYX Jefferson. Type *M. jeffersonii* Desm.

Jefferson, Thos. 1799 A.
Allen, J. A. 1876 A.
Ameghino, F. 1889 A, p. 690.
Amer. Geologist 1891 G, p. 193.
Blainville, H. M. D. 1839 B.
1839 C, p. 116.
1864 A, iv, EE, p. 42, pls. iii, iv.
Bronn, H. G. 1838 A, p. 1258.
Burmeister, H. 1866 B, p. 179.
1879 B, p. 382.
Claypole, E. W. 1891 A.
1897 A.
Cope, E. D. 1871 I, p. 72.
1889 C, p. 186.
1889 P, p. 660, pl. xxxi.
Cuvier, G. 1804 A, pp. 358–376. ("Megalonix.")
1834 A, viii, pt. i, pp. 304–330.
De Kay, J. E. 1842 C, p. 98.
Gervais, P. 1855 A, p. 44.
1873 A, p. 466.
Giebel, C. G. 1847 A, p. 111.
Harlan, R. 1825 A, p. 201.
1835 B, p. 271.
Holmes, F. S. 1858 B.
Leidy, J. 1855 B, pp. 3, 57.
1857 K.
1860 A, p. 107.
Lund, P. W. 1841 A, p. 72.
Lydekker, R. 1887 A, p. 111.
1896 B, p. 105.
Nicholson and Lydekker 1889 A, p. 1299.
Owen, R. 1840 F, p. 64.
1842 D.
1843 B.
1845 B, p. 333.
1852 A.
1866 B, p. 411.
Pictet, F. J. 1853 A, p. 268, pl. viii, figs. 1–3.
Reinhardt, J. 1879 A.
Safford, J. M. 1892 A.
1892 B.
Trouessart, E. L. 1898 A, p. 1106.
Wheatley, C. M. 1871 A.
Wistar, C. 1799 A.
Wortman, J. L. 1897 B.
Wyman, J. 1850 D.
Zittel, K. A. 1893 B, p. 134.

Megalonyx dissimilis Leidy.

Leidy, J. 1855 B, pp. 45, 57, pl. xvi, figs. 8, 15.
Cope, E. D. 1889 P, p. 660.
1896 F, p. 379. (Syn. of M. jeffersonii.)
Cuvier, G. 1804 A, pl. xxiii, fig. 13. ("Megalonix.")
1834 A, pl. ccxvi, fig. 13. ("Megalonyx.")
Leidy, J. 1852 H, p. 117. (No description.)
1854 A, p. 9. (No description.)
1869 A, p. 412.
Roger, O., 1896 A, p. 96.
Trouessart, E. L. 1898 A, p. 1106.
Wailes, B. L. C. 1854 A, p. 286.
Pleistocene; Mississippi.

Prof. Cope (1896 F, p. 379) regards this species, described by Leidy, as synonymous with *M. jeffersonii.*

Megalonyx jeffersonii (Desmarest).

Desmarest, A. G., 1822, Mammalogie, p. 366. (Megatherium.)
Bronn, H. G. 1838 A, p. 1255, pl. xlv, fig. 10.
Burmeister, H. 1866 B, p. 180.
Claypole, E. W. 1891 A. ("Megalonyx"; this species?)
1897 A. ("Megalonyx"; this species?)
Cooper, W. 1831 A, pp. 171, 206.
1833 A. ("Megalonyx.")
Cooper, Smith, and De Kay 1831 A, p. 371.
Cope, E. D. 1869 E, p. 172.
1889 P, p. 660.
1893 A, p. 50.
1896 F, p. 379.
1899 A, p. 210.
Cope and Wortman 1884 A, p. 39, pl. v, figs. 1, 2.
Cuvier, G. 1804 A, pp. 358–376, pl. xxiii, except fig. 13. ("Megalonix.")
1834 A, viii, pt. i, p. 304; pl. ccxvi, except fig. 13. ("Megalonyx.")
De Kay, J. E. 1842 C, p. 99.
Dickeson, M. W. 1846 A, p. 106.
Harlan, R. 1825 A, p. 201.
1831 A, p. 269, pls. xii–xiv (M. laqueatus; M. jeffersonii); p. 384 (Aulaxodon s. Pleurodon).
1831 B, p. 74.
1834 B, p. 65 (M. jeffersonii); p. 67 (M. laqueatus.)
1835 A, p. 278. (M. laqueatus.)
1835 B, p. 271. (M. laqueatus.)
1835 C, p. 319, pls. xii–xiv; pl. xv, figs. 5–7. (M. laqueatus.)
1843 A, p. 209. (M. laqueatus, in part.)
Jefferson, Thos. 1799 A. ("Megalonyx.")
Kindle, E. M. 1898 A, p. 485.
Leidy J. 1852 H, p. 117. (M. jeffersonii; M. potens.)
1854 A, p. 9.
1854 I, p. 200.
1855 B, pp. 3, 57, pls. i–xiii.
1860 A, p. 107, pl. vi, fig. 1.
1869 A, pp. 411, 412.
1870 H, p. 13.
1889 E, p. 27.
Lesley, J. P. 1889 A, p. 383.
Lindahl, J. 1892 A, pl. v, figs. 2, 4, 6.
Lund, 1839 A, p. 578.
Lydekker, R. 1887 A, p. 111.
1896 B, p. 107.
Lyell, C. 1843 B, p. 128. ("Megalonyx.")
1844 A, p. 323. ("Megalonyx.")
Mercer, H. C. 1897 A, figs. 1–26.
Nicholson and Lydekker 1889 A, p. 1229.
Orton, E. 1891 A.
Owen, D. D. 1857 A, p. 273.
Owen, R. 1840 F, pp. 64, 99, pl. xvii, fig. 1.
1842 D.
1843 B, p. 343.
Quenstedt, F. A. 1852 A, p. 44, pl. i, fig. 1.
1885 A, p. 61, pl. i, fig. 15.
Rafinesque, C. S., 1832, Atlantic Jour., p. 18. (Aulaxodon speleum.)

Roger, O. 1896 A, p. 96.
Steinmann and Döderlein 1890 A, p. 741.
Troost, G. 1835 A, p. 144.
Trouessart, E. L. 1898 A, p. 1106.
Wailes, B. L. C. 1854 A, p. 286.
Ward, H. A. 1864 A.
Wistar, C. 1799 A, p. 526, pls. i, ii. ("Megalonix.")
Wortman, J. L. 1897 B, p. 78, figs. 5, 10.
Wyman, J. 1850 A, p. 58, figs. 1-3. (M. laqueatus.)
1862 A, p. 422.
Zittel, K. A. 1893 B, p. 134, fig. 110.
Pleistocene; West Virginia, Northern Illinois, Indiana, Ohio, Kentucky, Tennessee, Alabama, Mississippi, Florida.

Megalonyx leidyi Lindahl.

Lindahl, J. 1892 A, pp. 1-10, pls. i-iv; pl. v, figs. 1, 3, 5, 7-9.
Cope, E. D. 1889 P, p. 660, pl. xxxi. ("Megalonyx.")
1893 A, p. 49.
Roger, O. 1896 A, p. 96.
Trouessart, E. L. 1898 A, p. 1106.
Udden, J. A. 1891 A, p. 342.
Williston, S. W. 1897 I, p. 304.
1898 I, p. 93.
Pliocene; Kansas.

Megalonyx leptostomus Cope.

Cope, E. D. 1893 A, p. 49, pl. xiii, figs. 1-3.
Matthew, W. D. 1899 A, p. 75.
Roger, O. 1896 A, p. 96.
Trouessart, E. L. 1898 A, p. 1106.
Pliocene (Blanco); Texas.

Megalonyx loxodon Cope.

Cope, E. D. 1871 I, p. 74, figs. 1, 2.
1889 P, p. 660.
1896 F, p. 379.
1899 A, p. 211.
Lesley, J. P. 1889 A, p. 383, figures.
Roger, O. 1896 A, p. 96.
Trouessart, E. L. 1898 A, p. 1107.
Pleistocene; Pennsylvania.

Megalonyx scalper Cope.

Cope, E. D. 1899 A, p. 218, pl. xviii, figs. 2, 2a.
Pleistocene; Pennsylvania.
According to Cope this may be the same species as *Ereptodon priscus*.

Megalonyx tortulus Cope.

Cope, E. D. 1871 I, p. 84, fig. 12.
1889 P, p. 660.
1896 F, p. 379.
1899 A, p. 217.
Lesley, J. P. 1889 A, p. 384, figures.
Roger, O. 1896 A, p. 96.
Trouessart, E. L. 1898 A, p. 1107.
Pleistocene; Pennsylvania.

Megalonyx validus Leidy.

Leidy, J. 1868 A, p. 175.
Cope, E. D. 1871 I, p. 80.
Leidy, J. 1869 A, p. 412, pl. xxx, fig. 6.
Roger, O. 1896 A, p. 96.
Trouessart, E. L. 1898 A, p. 1106.
Pleistocene; Texas.

Megalonyx wheatleyi Cope.

Cope, E. D. 1871 I, p. 75, figs. 3-6; fig. 10.
1871 F. (M. dissimilis, not of Leidy.)
1871 I, p. 83, fig. 11 (M. sphenodon); figs. 7-8 (M. dissimilis).
1893 A, p. 50. (M. wheatleyi, M. dissimilis.)
1896 F, p. 378.
1899 A, pp. 210, 211, 212.
Lesley, J. P. 1889 A, p. 384, figures. (M. sphenodon, M. wheatleyi.)
Roger, O. 1896 A, p. 96.
Trouessart, E. L. 1898 A, p. 1107.
Pleistocene; Pennsylvania.

EREPTODON Leidy. Type *E. priscus* Leidy.

Leidy, J. 1853 E.
1855 B, pp. 46, 58.
Trouessart, E. L. 1898 A, p. 1106. (Syn.? of Megalonyx.)
Zittel, K. A. 1893 B, p. 134. (Syn.? of Megalonyx.)

Ereptodon priscus Leidy.

Leidy, J. 1853 E.
Cope, E. D. 1899 A, p. 219.
Leidy, J. 1855 B, pp. 46, 58, pl. xiv, figs. 9, 10; pl. xvi, fig. 18.
1869 A, p. 412.
Roger, O. 1896 A, p. 96. (Megalonyx.)
Trouessart, E. L. 1898 A, p. 1106. (Megalonyx.)
Wailes, B. L. C. 1854 A, p. 286.
Pleistocene; Mississippi.

MYLODON Owen. Type *M. harlani* Owen.

Owen, R. 1840 F, p. 63.
Ameghino, F. 1889 A, p. 741.
1898 A, p. 324.
Blainville, H. M. D. 1864 A, iv, EE, p. 39, pls. i-iv.
Bronn, H. G. 1838 A, p. 1256. ("Orycterotherium?.")
Burmeister, H. 1865 B.
1866 B, p. 160.
1879 B, p. 345.
Cope, E. D. 1882 FF, p. 923.
1889 C, p. 188.
1889 P, p. 660.
Desor, E. 1852 A, p. 58.
Flower and Lydekker 1891 A, p. 189.
Gervais, P. 1855 A, p. 45.
1873 A, p. 467.
Gervais and Ameghino 1880 A, p. 155.
Giebel, C. G. 1847 A, p. 117.
Harlan, R. 1842 B, p. 141. (Aulaxodon *seu* Pleurodon, in part.)
1842 C, p. 111. (Orycterotherium, type *O. missouriense*.)
1843 A.
1843 B. (Orycterotherium.)

Leidy, J. 1853 E. (Eubradys, type *E. antiquus.*)
1855 B, pp. 47, 58.
Lönnberg, E. 1899 A.
Lydekker, R. 1887 A, p. 104.
1894 A, p. 77.
1896 B, p. 105.
Marsh, O. C. 1883 B.
Nicholson and Lydekker 1889 A, p. 1298.
Owen, R. 1840 F, p. 57. (Glossotherium.)
1842 D.
1843 B.
1845 C.
1852 A.
1855 B.
1856 B.
1858 C.
1860 D.
1866 B, p. 400.
Pictet, F. J. 1853 A, p. 269.
Reinhardt, J. 1866 A.
1879 A.
Schmidt, O. 1886 A, p. 115.
Steinmann and Döderlein 1890 A, p. 740.
Wortman, J. L. 1897 B.
Zittel, K. A. 1893 B, p. 137.

Mylodon harlani Owen.

Owen, R. 1840 F, pp. 68, 69, pl. xvii, figs. 3, 4.
Carpenter, W. M. 1846 A, p. 249. (Oryctotherium;" identification very doubtful.)
Claypole, E. W. 1891 A.
Cooper, W. 1831 A, p. 172. ("Megalonyx.")
1833 A, p. 166. ("Megalonyx.")
Cope, E. D. 1871 I, p. 85.
1889 P, p. 666. (M. laqueatus.)
1896 H, p. 458, pl. x, figs. 1, 2. (M. harlanii.)
1899 A, p. 210. (M.? harlanii.)
Dickeson, M. W. 1846 A. (Megalonyx laqueatus.)
Flower and Lydekker 1891 A, p. 189.
Giebel, C. G. 1847 A, p. 118.
Harlan, R. 1831 B, p. 74, in part; pl. iii, figs. 1-3. (Megalonyx laqueatus.)
1835 C, p. 334, pl. xv, figs. 2-4. (Megalonyx laqueatus.)
1842 A, p. 392. ("Orycterotherium.")
1842 B, p. 141 (Megalonyx laqueatus, Aulaxodon *seu* Pleurodon, in part); p. 142 (Orycterotherium missouriense).
1842 C, p. 111. (Orycterotherium missouriense.)
1843 A, p. 209 (Megalonyx laqueatus); p. 210 (Orycterotherium missouriense).
1843 B. pls. i-iii. (Megalonyx laqueatus, Orycterotherium missouriense.)
Holmes, F. S. 1858 B. ("Megalonyx.")
Leidy, J. 1853 E. (Eubradys antiquus.)
1854 A, p. 10.
1855 B, pp. 47, 58, pl. xiv, figs. 1-3; pl. xvi, figs. 19, 20.
1860 B, p. 111, pl. xx, figs. 7-7*b*.
1869 A, p. 413.
1871 C, p. 365.
1884 A.
1885 B. (M. harlani; ?Orycterotherium missouriense.)
1889 F, p. 33, pl. v, figs. 1-4.
Lydekker, R. 1887 A, p. 106.
Lyell, C. 1843 B, p. 128. ('Mylodon.")
1844 A, p. 323. (Megalonyx.)
Nicholson and Lydekker 1889 A, p. 1299.
Owen, R. 1842 D.
1843 B, p. 341. (M. harlani, Megalonyx laqueatus.)
1845 B, p. 335.
1845 C.
Perkins, H. C. 1842 A. ("Mylodon"; identification doubtful.)
1843, in Harlan R. 1843 B, p. 80. (Orycterotherium oregonense.)
1844 A, p. 135. (Orycterotherium oregonense.)
Pictet, F. J. 1853 A, p. 270.
Roger, O. 1896 A, p. 98.
Trouessart, E. L. 1898 A, p. 1115.
Wailes, B. L. C. 1854 A, p. 286.
Williston, S. W. 1895 A, p. 175, figs. 1, 2. (Identification doubtful.)
Wilson, T. 1892 A. ("Mylodon.")
Zittel, K. A. 1893 B, p. 138. (M. laqueatus.)

In addition to the above a few references, mostly of minor importance, may be found in Leidy, J. 1869 A, pp. 413, 414.

Pleistocene; Kentucky, Missouri, Louisiana, Mississippi, South Carolina, Oregon, Kansas?, Pennsylvania?.

Mylodon renidens Cope.

Cope, E. D. 1896 H, p. 460, pl. x, fig. 3; pl. xi, figs. 5, 6.
Roger, O. 1896 A, p. 98.
Trouessart, E. L. 1898 A, p. 1116.

Pleistocene; Louisiana.

Mylodon sodalis Cope.

Cope, E. D. 1878 H, p. 385.
1889 F.
1889 P, p. 660, fig. 1.
1889 S, pp. 978, 980.
1893 A, p. 87.
Roger, O. 1896 A. p. 98. (Syn. of M. harlani.)
Trouessart, E. L. 1898 A, p. 1116. (Syn. of M. harlani.)

Pliocene; Oregon, Texas?.

Mylodon sulcidens Cope.

Cope, E. D. 1896 H, p. 462, pl. x, fig. 4; pl. xi, fig. 7.
Roger, O. 1896 A, p. 98.
Trouessart, E. L. 1898 A, p. 1116.

Pleistocene; Louisiana.

MOROTHERIUM Marsh. Type *M. gigas* Marsh.

Marsh, O. C. 1874 C, p. 531.
Flower and Lydekker 1891 A, pp. 190, 413. (Syn. of Chalicotherium.)
Marsh, O. C. 1876 G, p. 61.
Marsh, O. C. 1883 B.
1892 D, p. 448.
1897 B, p. 144.
Zittel, K. A. 1893 B, p. 136.

Morotherium gigas Marsh.

Marsh, O. C. 1874 C, p. 531.
King, C. 1878 A, p. 443.
Marsh, O. C. 1897 B, p. 143, figs. 8, 9.
Roger, O. 1896 A, p. 96.
Trouessart, E. L. 1898 A, p. 1107.
Pliocene; California.

Morotherium leptonyx Marsh.

Marsh, O. C. 1874 C, p. 532.
King, C. 1878 A, p. 443.
Roger, O. 1896 A, p. 96.
Trouessart, E. L. 1898 A, p. 1107.
Pliocene; Idaho.

GLYPTODONTIDÆ.

Ameghino, F. 1883 A. (Glyptodontes.)
1889 A, p. 758 (Glyptodontia); p. 775 (Glyptodontidæ).
Burmeister, H. 1865 A.
1865 C.
1866 B, p. 183. (Biloricata.)
1871 B.
1872 A. ("Glyptodonten.")
1874 A.
1879 A.
1879 B, p. 388. (Loricata.)
Cope, E. D. 1889 C, p. 207.
1889 P, p. 658.
Flower, W. H. 1882 A.
Flower and Lydekker 1891 A, p. 202.
Gadow, H. 1898 A. p. 42. (Dasypodidæ, part.)
Lydekker, R. 1887 A, p. 114.
1894 A. p. 1.
1896 B. p. 94.
Mercerat, A., 1891, Revista Mus. La Plata, ii, p. 27 (Hoplophoridæ.)
Nicholson and Lydekker 1889 A, p. 1292.
Reh, L. 1895 A, p. 170.
Roger, O. 1896 A, p. 101.
Schlosser, M. 1890 C, p. 251.
Steinmann and Döderlein 1890 A, p. 738.
Trouessart, E. L. 1898 A, p. 1123.
Woodward, A. S. 1898 B, p. 282.
Zittel, K. A. 1893 B, p. 144.

GLYPTODON Owen. Type *G. clavipes* Owen.

Owen, R., 1838, Parish's Buenos Ayres and La Plata. p. 178 B.
Ameghino, F. 1883 A.
1889 A, p. 775.
1892 A, p. 22.
Blainville, H. M. D. 1864 A, iv, EE, p. 47, pls. i, ii.
Burmeister, H. 1864 A.
1865 A.
1865 C.
1866 A.
1866 B, p. 185.
1871 A.
1871 B.
1874 A.
1879 A.
1879 B, p. 420.
Cope, E. D. 1889 P, p. 662.
Flower, W. H. 1883 D, p. 387, figs. 39, 40.
Flower and Lydekker 1891 A, p. 202.
Giebel, C. G. 1847 A, p. 109.
Hale, C. S. 1848 A, p. 357.
Holmes, F. S. 1858 B.
Huxley, T. H. 1865 A.
1872 A, p. 291.
Koken, E. 1888 C.
Lund, P. W. 1839 B, p. 218. (Hoplophorus.)
Lydekker, R. 1887 A, p. 114.
1894 A, p. 3.
1896 B, p. 96.
Meyer, H. 1865 A.
Natural Science 1893 A, p. 140, fig. 2.
Nicholson and Lydekker 1889 A, p. 1293.
Owen, R. 1840 B.
1845 A.
1847 C, p. 67.
Pictet, F. J. 1853 A, p. 278.
Pouchet, G. 1866 A.
Quenstedt, F. A. 1885 A, p. 63.
Reinhardt, J. 1875 A.
Röse, C. 1892 D. p. 511.
Serres, M. 1865 A.
1865 B.
Steinmann and Döderlein 1890 A, p. 738.
Trouessart, E. L. 1898 A, p. 1125.
Woodward, A. S. 1898 B, p. 283.
Zittel, K. A. 1893 B, p. 144.

Glyptodon euphractus Lund.

Lund, P. W., 1838, Overs. K. Danske Vid. Selskab. Forh. viii, p. lii. (Hoplophorus.)
Ameghino, F. 1883 A, p. 28.
1889 A, p. 781, pl. liii, fig. 8.
Burmeister, H. 1871 A, pl. viii A. (Hoplophorus.)
1879 B, p. 410. (Hoplophorus.)
Gervais and Ameghino 1880 A, p. 202. (G. euphractus, G. sellowi.)
Leidy, J. 1889 E, p. 25. (Hoplophorus ornatus?.)
1892 A, p. 129. (Hoplophorus.)
Lund, P. W. 1839 B, p. 218. (Hoplophorus.)
1841 A, p. 70, pl. i, fig. 11; pl. xi; pl. xiv; pl. xv, figs. 1-7. (Hoplophorus.)
1842 A, pl. xxxv, figs. 1-4. (Hoplophorus.)
Lydekker, R. 1887 A, p. 121.
1894 A, p. 11.
Owen, R. 1868 A, p. 273.
Pouchet, G. 1866 A, p. 337, pls. ix, x. (Hoplophorus.)
Reinhardt, J. 1875 A, p. 165. (Hoplophorus, Schistopleurum.)
Roger, O. 1896 A, p. 101.
Trouessart, E. L. 1898 A, p. 1127.
Pliocene; South America, Florida.

Glyptodon petaliferus Cope.

Cope, E. D. 1888 N, p. 345.

Cope, E. D. 1889 F.
1889 P, p. 662.
1892 AA, p. 130.
Leidy, J. 1889 E, p. 25, pl. iv, fig. 9.
Roger, O. 1896 A, p. 103.
Trouessart, E. L. 1898 A, p. 1127.
Zittel, K. A. 1893 B, p. 147.
Pliocene: Mexico, Texas, Florida.

Glyptodon reticulatus Owen.

Owen, R., 1845, Cat. Foss. Mam. Aves. Roy. Coll. Surg., p. 119.
Ameghino, F. 1883 A, p. 28. (G. asper.)
1889 A, p. 784, pl. l, figs. 1-8; pl. li, figs. 1, 2; pl. lii, figs. 1-3; pl. liv, figs. 1-11.
Burmeister, H. 1864 A, p. 75.
1866 B, p. 200, pl. vi; pl. vii, figs. 4-6; pl. viii, fig. 6 (G. asper, original description); p. 205 (G. reticulatus).
1874 A, p. 268, pls. xxiii, xxiv, xixv; pl. xxv, fig. 1; pl. xxviii, fig. 1; pl. xxix, figs. 4, 6; pl. xxx, figs. 1, 4; pl. xxxi; pl. xxxii, fig. 2; pl. xxxiii, figs. 2, 3, 5, 6; pl. xxxiv, fig. 2; pl. xxxvii; pl. xl, fig. 1 (G. asper); p. 385 (G. reticulatus).
1879 B, p. 422 (G. reticulatus); p. 424 (Schistopleurum asperum).
Gervais and Ameghino 1880 A, p. 198. (G. typus.)
Leidy, J. 1889 E, p. 27, pl. v, figs. 11, 12. (G. asper.)
1892 A. (G. asper.)
Lydekker, R. 1887 A, p. 117.
1894 A, p. 5.
Nodot, L. 1855 A. (Schistopleurum.)
Roger, O. 1896 A, p. 102.
Trouessart, E. L. 1898 A, p. 1125.
Additional synonymy and literature in Ameghino, F. 1889 A, p. 784.
Pliocene; South America, Florida.

TOMIOPSIS Cope. Type *T. ferruminatus* Cope.

Cope, E. D. 1893 E, p. 317.
The position of this genus is uncertain.

Tomiopsis ferruminatus Cope.

Cope, E. D. 1893 E, p. 317.
Neocene?; Texas.

DASYPODIDÆ.

Broom, R. 1897 A.
Burmeister, H. 1879 B, p. 426. (Dasypidæ.)
1883 A. (Genus Eutatus.)
Cope, E. D. 1889 P, p. 658.
Flower, W. H. 1868 A.
1882 A.
1883 D, p. 386.
1885 A.
Flower and Lydekker, 1891 A, p. 194.
Gadow, H. 1898 A, p. 42. (Dasypodidæ, part.)
Giebel, C. G. 1867 A, p. 545. (Dasypus.)
Gill, T. 1872 B, p. 24.
Gray, J. E. 1869 A, p. 377.
Hæckel, E. 1895 A, p. 516. (Dasypodida.)
Huxley, T. H. 1872 A, p. 290.
Lydekker, R. 1887 A, p. 135.
1894 A, p. 51.
1896 B, p. 94.
Nicholson and Lydekker 1889 A, p. 1291.
Owen, R. 1832 A. (Dasypodæ.)
1851 C, p. 743. (Dasypus.)
1855 B, p. 381.
Roemer, F. 1892 A, p. 525.
1893 A,
Roger, O. 1896 A, p. 107.
Schlosser, M. 1890 C, p. 251.
Steinmann and Döderlein 1890 A, p. 739.
Weber, M. 1893 A.
1893 B.
Zittel, R. A. 1893 B, p. 150. (Subord. Dasypoda.)

CHLAMYTHERIUM Lund. Type *C. humboldtii* Lund.

Lund, P. W., 1838, Overs. K. Danske Vid. Selsk. Forh. viii, p. lii.
Ameghino, F. 1883 A. pp. 23, 33.
1886 A, p. 208.
Flower and Lydekker 1891 A, p. 201.
Gervais and Ameghino 1880 A, p. 211.
Lydekker, R. 1887 A, p. 135.
1894 A, p. 52.
Lund, P. W. 1839, A, p. 572.
1839, B, p. 217.
1841 A, pp. 69, 232.
1842 A, p. 137, pl. xxxiv; pl. xxxv, fig. 5.
Pictet, F. J. 1853 A, p. 274.
Röse, C. 1892 D, p. 516.
Zittel, K. A. 1893 B, p. 151.

The name of this genus is usually spelled *Chlamydotherium;* but the original form is that here given. The original description is adequate.

Chlamytherium humboldtii Lund.

Lund, P. W., 1838, Overs. K. Danske Vid. Selsk. Forh., viii, p. lii.
Ameghino. F. 1883 A, p. 33.
Cope, E. D. 1889 P, p. 662 ("Glyptodon floridanus[1] Leidy.")
1892 AA, p. 130.
Leidy, J. 1889 B, p. 97. (Glyptodon septentrionalis.)
1889 E, p. 24, pl. iv, figs 3-6.
1892 A.
Lund, P. W. 1839 B, p. 217.
1841 A, p. 69, pl. i, figs. 7-10, 12, 13; pl. ii, figs. 1-3; pl. xii, figs. 1, 6, 7; pl. xiii, figs. 2, 6, 7-11; pl. xiv, fig. 1.
1842 A, p. 137, pl. xxxiv; pl. xxxv, fig. 5.
Lydekker, R. 1887 A, p. 136.
1896 B, p, 96.

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[1] The writer has made search in Leidy's papers without finding this name. It occurs in neither Leidy's nor Cope's lists in Bull. No. 84, U. S. Geol. Survey (Correlation paper). The name is probably due to an error on part of Professor Cope.

Roger, O. 1896 A, p. 108 (Glyptodon septentrionalis); p. 108 (C. humboldti).
Trouessart, E. L. 1898 A, p. 1127 (Glyptodon septentrionalis); p. 1137 (C. humboldti).
Zittel, K. A. 1893 B, p. 147 (Glyptodon floridanus[1]); p. 152 (C. humboldti).

Pliocene; South America, Florida.

Order SIRENIA.

Allen, J. A. 1881 A.
Baur, G. 1887 A, p. 493.
Brandt, J. F. 1862 A.
  1862 B.
  1868 A.
Cope, E. D. 1880 B, p. 456.
  1887 S, p. 342.
  1889 C, p. 142.
  1889 R, pp. 874, 876.
  1890 F,
  1898 B, p. 109.
Cuvier, G. 1834 A, viii, pt. ii, pp. 1-74, pls. ccxx, ccxxi.
Flot, L. 1886 A.
  1886 B.
Flower, W. H. 1876 B, xiii, p. 409.
  1883 A.
  1883 D, p. 389.
  1885 A.
Flower and Lydekker 1891 A, p. 212.
Gadow, H. 1898 A, p. 42.
Gegenbaur, C, 1898 A.
Gervais, P. 1874 B, p. 578. ("Sirénides.")
Gill, T. 1872 A, p. 301.
  1872 B, pp. 13, 48, 91.
  1873 A.
Gill and Coues, 1877 A, p. 1041.
Gray, J. E. 1866 A, p. 356.
Hæckel, E. 1895 A, p. 567.
Hay, O. P. 1899 F, p. 682.
Huxley, T. H. 1872 A, p. 330.
Krauss, F. 1858 A.
  1862 A.
  1870 A.
Kükenthal, W. 1890 C.
  1897 A.
Lartet, E. 1866 A.
Lepsius, G. R. 1881 A. (Sirenia.)
Lydekker, R. 1892 A.
  1896 B,
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 212.
Owen, R. 1866 B, p. 429.
  1868 A, p. 283.
  1875 A.
  1875 B.
Parker, W. K. 1868 A, p. 218.
Roger, O. 1896 A, p. 247.
Ryder, J. A. 1878 A.
  1885 D.
Schlosser, M. 1889 A.
  1890 D.
Schmidt, O. 1886 A, p. 242.
Seeley, H. G. 1888 N, p. 181.
Slade, D. D. 1888 A, p. 244.
Steinmann and Döderlein 1890 A, p. 708.
Tomes, C. S. 1898 A, p. 385.
Trouessart, E. L. 1898 A, p. 999.
Woodward, H. 1885 D.
Zigno, A. de 1887 A.
Zittel, K. A. 1893 B, pp. 187, 201, 740.

PRORASTOMIDÆ.

Cope, E. D. 1889 R, p. 876.
  1890 F, p. 698.
Flower and Lydekker 1891 A, p. 224. (Halitheriidæ.)
Gadow, H. 1898 A, p. 43.
Haeckel, E. 1895 A, p. 566. (Halicorida.)
Zittel, K. A. 1893 B, p. 194.

This family is based on *Prorastomus sirenoides*, Owen, found in the island of Jamaica. The following references are given to the literature of this animal: Owen, R. 1855 C; Owen, R. 1875 B, pls. xxviii, xxix; Leidy, J. 1869 A, p. 414; Trouessart, E. L. 1898 A, p, 999; Thomas and Lydekker 1897 A, p. 599; Lepsius, G. R. 1881 A; Tomes, C. S. 1898 A, p. 390.

HALITHERIIDÆ.

Gill, T. 1872 B, pp. 13, 91, 92.
Brandt, J. F. 1868 A, p. 344. (<Halicorida.)
Cope, E. D. 1889 R, p. 876.
  1890 F, p. 698.
  1898 B, p. 110.
Flower and Lydekker 1891 A, p. 222.
Lepsius, G. R. 1881 A. (Halitherium.)
Lydekker, R. 1887 A, p. 5.
Nicholson and Lydekker 1889 A, p. 1310.
Roger, O. 1896 A, p. 247.
Trouessart, E. L. 1898 A, p. 1004. (Halicoridæ.)
Zittel, K. A. 1893 B, p. 195. (<Halicoridæ.)

DIOPLOTHERIUM Cope. Type *D. manigaultii* Cope.

Cope, E. D. 1883 N.
  1883 X.
  1890 F, p. 698.
Flower, W. H. 1885 A, p. 223.
Flower and Lydekker 1891 A, p. 223.
Nicholson and Lydekker 1889 A, p. 1311.

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[1] The writer has made search in Leidy's papers without finding this name. It occurs in neither Leidy's nor Cope's lists in Bull. No. 84, U. S. Geol. Survey (Correlation paper). The name is probably due to an error on part of Professor Cope.

Zittel, K. A. 1893 B, p. 201.

It is not at all certain that this genus belongs among the Sirenia.

Dioplotherium manigaultii Cope.

Cope, E. D. 1883 N.

Cope, E. D. 1883 X.

1890 F, p. 698, pl. xxv, figs. 1–5.

Roger, O. 1896 A, p. 249.

Trouessart, E. L. 1898 A, p. 1006.

Tertiary (Phosphate beds); South Carolina.

HEMICAULODON Cope. Type *H. effodiens* Cope.

Cope, E. D. 1869 E, p. 190.

1883 N, p. 52.

Zittel, K. A. 1893 B, p. 201.

A genus of uncertain position.

Hemicaulodon effodiens Cope.

Cope, E. D. 1869 E, p. 191, pl. v, fig. 6.

Brandt, J. F. 1873 A, p. 290.

Cope, E. D. 1890 F, p. 699.

Leidy, J. 1869 A, p. 440.

Roger, O. 1896 A, p. 249.

Trouessart, E. L. 1898 A, p. 1006.

Eocene; New Jersey.

DESMOSTYLUS Marsh. Type *D. hesperus* Marsh.

Marsh, O. C. 1888 B, p. 95.

Flower and Lydekker 1891 A, p. 223.

Nicholson and Lydekker 1889 A, p. 1310.

Zittel, K. A. 1893 B, p. 201.

A genus of doubtful position.

Desmostylus hesperus Marsh.

Marsh, O. C. 1888 B, p. 95, figs. 1–3.

Roger, O. 1896 A, p. 249.

Trouessart, E. L. 1898 A, p. 1006.

Tertiary; California.

TRICHECHIDÆ.

Gill, T. 1872 B, pp. 14, 91.

Blainville, H. M. D. 1864 A, iii, U, pls. i–xi. ("Lamantinos.")

Brandt, J. F. 1868 A, p. 343. (Manatida.)

Cope, E. D. 1890 F, p. 700. (Manatidæ.)

Flower, W. H. 1885 A, p. 215. (Manatidæ.)

Flower and Lydekker 1891 A, p. 215. (Manatidæ.)

Gray, J. E. 1866 A, p. 357. (Manatidæ.)

Haeckel, E. 1895 A, p. 566. (Manatida.)

Nicholson and Lydekker 1889 A, p. 1311. (Manatidæ.)

Roger, O. 1896 A, p. 247. (Manatidæ.)

Trouessart, E. L. 1898 A, p. 999. (Manatidæ.)

Zittel, K. A. 1893 B, p. 195. (Manatidæ.)

TRICHECHUS Linn. Type *T. manatus* Linn.

Linnæus, C., 1758, Syst. Nat., ed., 10, i, p. 34.

Unless otherwise indicated, the following writers employ for the genus the name *Manatus*.

Allen, J. H. 1846 A.

Baikie, B. 1857 A.

Blainville, H. M. D. 1864 A, iii, U, plates.

Brandt, J. F. 1862 A.

1862 B.

1868 A.

Cope, E. D. 1890 F, p. 700.

Cuvier, G. 1834 A, viii, pt. ii, pp. 16–40, pl. ccxx, figs. 1, 2. (No generic name.)

Flower, W. H. 1876 B, xiii, p. 410.

1885 A.

Flower and Lydekker 1891 A, p. 215.

Gill, T. 1873 A.

Gray, J. E. 1857 A.

Harlan, R. 1834 B, p. 73.

1835 B, p. 278.

1835 J, p. 385.

Howes and Harrison 1893 A.

Kneeland, S. 1850 A.

Krauss, F. 1858 A.

1862 A.

Kükenthal, W. 1890 C.

1891 C.

1896 A.

1897 A.

Lepsius, G. R. 1881 A.

Murie, J. J. 1872 A.

Owen, R. 1845 B, p. 371, pl. xcvi.

1868 A, p. 284.

1875 A.

1875 B.

Parker, W. K. 1868 A, p. 218.

Thomas and Lydekker 1897 A, p. 596. (Trichechus.)

Trouessart, E. L. 1898 A, p. 1000.

Ward, H. L. 1887 A.

Woodward, H. 1885 D, p. 424.

Zittel, K. A. 1893 B, p. 195.

Trichechus antiquus (Leidy.)

Leidy, J. 1856 J, p. 165. (Manatus.)

Cope, E. D. 1890 F, p. 700. (M. fossilis.)

Leidy, J. 1860 B, p. 117, pl. xxiv, figs. 5–7. (Manatus.)

1869 A, p. 414. (Manatus.)

1877 A, p. 214. (Manatus.)

1889 E, p. 27. (Manatus.)

1892 A. (Manatus.)

Roger, O. 1896 A, p. 247. (Manatus.)

Trouessart, E. L. 1898 A, p. 1000. (Manatus.)

Pleistocene; South Carolina: Pliocene (Peace Creek); Florida.

Not improbably the same as *T. manatus*.

Trichechus inornatus (Leidy.)

Leidy, *J.* 1873 B, p. 336, pl. xxxvii, figs. 16, 17. (Manatus.)
Roger, O. 1896 A, p. 247. (Manatus.)
Trouessart, E. L. 1898 A, p. 1000. (Manatus.)
Tertiary (Phosphate beds); South Carolina.

Trichechus manatus Linn.

Linnæus, *C.*, 1758, Syst. Nat. ed., 10, i, p. 34.
Baikie, B. 1857 A. (M. latirostris.)
Baur, G. 1887 D, p. 840. (Manatus americanus.)
Giebel, C. G. 1847 A, p. 231. (Manatus americanus fossilis.)
Gray, J. E. 1857 A. (M. latirostris, M. americanus.)
Hartlaub, C. 1886 A. (M. latirostris.)
Lepsius, G. R. 1881 A. (Manatus americanus.)
Murie, J. 1872 A. (M. americanus.)
Owen, R. 1866 B, p. 432. (M. americanus.)
Parker, W. K. 1868 A, p. 218, pl. xxix, fig. 21. (M. americanus.)
Trouessart, E. L. 1898 A, p. 1000. (M. latirostris.)
Recent; and probably including many or all of the undetermined bones of *Manatus* which have been found along the Eastern and Floridan coasts.

Trichechus sp. indet.

The remains referred to in the following citations belong to uncertain and probably indeterminable species. Most of them probably belong to *T. manatus*.

Allen, J. H. 1846 A, p. 41. (Manatus.)
Cope, E. D. 1867 C, p. 138. (Manatus.)
De Kay, J. C. 1842 C, p. 123. (M. giganteus.)
Gibbes, R. W. 1850 C, p. 67. (Manatus.)
Harlan, R. 1834 B, p. 73. (Manatus.)
1835 B, p. 278. (Manatus.)
1835 J, p. 385. (Manatus.)
Leidy, J. 1854 A, p. 10. (Manatus.)
1869 A, p. 414. (Manatus.)
Pictet, F. J. 1853 A, p. 372. (M. americanus fossilis.)
Smith, J. L. 1844 A. (Manatus.)
Pleistocene; New Jersey, Maryland, Virginia, North Carolina, South Carolina, Florida.

HYDRODAMALIDÆ.

Palmer, *T. S.* 1895 A, p. 450.
Brandt, J. F. 1849 A, p. 141. (Edentata seu Rhytinea).
1868 A, p. 100 (Rhytinæ); p. 344 (<Halicorida).
Cope, E. D. 1890 F, p. 701. (Rhytinidæ.)
Flower, W. H. 1885 A, p. 221. (Rhytinidæ.)
Flower and Lydekker 1891 A, p. 221. (Rhytinidæ.)
Gadow, H. 1898 A, p. 45. (Halicoridæ, part.)
Gill, T. 1872 B, p. 14. (Rhytinidæ.)
Haeckel, E. 1895 A. p. 566. (Rhytinida.)
Lepsius, G. R. 1881 A. (Rhytina.)
Lydekker, R. 1887 A, p. 15. (Rhytinidæ.)
Nicholson and Lydekker 1889 A, p. 1311. (Rhytinidæ.)
Zittel, K. A. 1893 B, p. 196. (<Halicoridæ.)

HYDRODAMALIS Retzius. Type *H. gigas* (Zimm.).

Retzius, 1894, K. Vet. Acad. Handl. Stockholm, xv, p. 292.
Baer, K. E. 1840 A. (Rytina.)
Brandt, J. F. 1849 A. (Rhytina.)
1862 A. (Rhytina.)
1862 B. (Rhytina.)
1862 C. (Rhytina.)
1867 D. (Rhytina.)
1868 A. (Rhytina.)
Cope, E. D. 1890 F, p. 698. (Rhytina.)
Flower and Lydekker 1891 A, p. 221. (Rhytina.)
Gray, J. E. 1866 A, p. 365. (Rytina.)
Lepsius, G. R. 1881 A. (Rhytina.)
Lydekker, R. 1887 A, p. 15. (Rhytina.)
Nordmann, A. 1862 A. (Rhytina.)
Owen, R. 1845 B, p. 316. (Rytina.)
1875 A. (Rhytina.)
1875 B. (Rhytina.)
Palmer, T. S. 1895 A.
Weyhe, — 1875 A, p. 100. (Rhytina.)
Woodward, H. 1885 D, p. 415. (Rhytina.)
Zittel, K. A. 1893 B, p. 206. (Rhytina.)

Hydrodamalis gigas (Zimm.).

Zimmermann, 1780, Geogr. Geschichte, ii, p. 426, fig. 5. (Manati). (*Fide* Trouessart.)
Brandt, J. F. 1849 A. (Rhytina borealis.)
1866 A, p. 113. (R. borealis.)
1866 C. (R. borealis.)
1867 A. (R. borealis.)
Brandt, J. F. 1868 A, pls. i-ix. (R. borealis.)
Büchner, E. 1891 A, pl. i. (Rhytina.)
Claudius, M. 1867 A. (R. stelleri.)
Cope, E. D. 1890 F, p. 701. (R. gigas.)
Evermann, B. W. 1893 A. (R. gigas.)
Flower, W. H. 1876 B, xiii, p. 411.
1885 A, p. 231. (R. stelleri.)
Flower and Lydekker 1891 A, p. 222. (R. stelleri.)
Gray, J. E. 1866 A, p. 365. (R. gigas.)
Hutchinson, H. N. 1893 A, p. 246, pl. xxvi. (R. gigas.)
Lydekker, R. 1887 A, p. 15, fig. 5. (R. gigas.)
Murie, J. 1872 B. (Rhytina.)
Nicholson and Lydekker 1889 A, p. 1311. (R. gigas.)
Nordmann, A. 1862 A. (Rhytina stelleri.)
Palmer, T. S. 1895 A.
Roger, O. 1896 A, p. 249. (Rhytina.)
Stejneger, L. 1883 A, (R. gigas.)
1884 A. (R. gigas.)
1886 A, p. 317. ("Sea-cow.")
1887 A. (R. gigas.)
1893 A. (R. gigas.)
Steller, G. W. 1751 A. ("Manatus.")
Trouessart, E. L. 1898 A, p. 1008. (Rhytina.)
Woodward, H. 1885 A. (R. stelleri.)
1885 D, p. 417, fig. 2. (R. gigas.)
Zigno, A de 1887 A. (R. borealis.)
Zittel, K. A. 1893 B, p. 200. (R. stelleri.)
Recently extinct; Commander Islands.

Order CETE Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 75.
Unless otherwise indicated, the following authors use the term Cetacea for this order.
Albrecht, P. 1886 A.
Allen, J. A. 1881 A. (Cete.)
Brandt, J. F. 1873 A.
Cope, E. D. 1867 C, p. 144.
  1880 B, p. 456.
  1887 S, p. 342.
  1889 C, p. 207.
  1890 E.
  1891 N, p. 69.
Duvernoy, G. L. 1851 A.
Flower, W. H. 1864 A.
  1867 A.
  1876 B, xiii, p. 449.
  1883 A.
  1883 D, p. 391.
  1885 A.
Flower and Lydekker 1891 A, p. 225.
Gadow, H. 1898 A. p. 44.
Gegenbaur, C. 1898 A.
Gill, T. 1871 B.
  1872 B, pp. 14, 49, 92. (Cete.)
  1873 C.
Gill and Coues 1877 A, p. 1043.
Gray, J. E. 1886 A, p. 61.
Gruber, W. 1859 A.
Haeckel, E. 1895 A. p. 562. (Cetomorpha, part.)
Hay, O. P. 1899 F, p. 682.
Howes, G. B. 1888 A, p. 506.
Huxley, T. H. 1870 A.
  1872 A, p. 333.
Jaekel, O. 1891 D, p. 198.
Küthenthal, W. 1888 A.
  1889 A.
  1890 A.
  1890 B.
  1890 C.
  1891 C.
  1893 B.
  1893 C.
  1895 A.
Leboucq, H. 1887 A.
  1888 A.
Leboucq, H. 1896 A.
Leche, W. 1895 A, p. 119.
Leidy, J. 1871 C, p. 365.
Lydekker, R. 1896 B.
Marsh, O. C. 1877 E.
Murie, J. 1865 A.
Nicholson and Lydekker 1889 A, p. 1300.
Osborn, H. F. 1888 F, p. 1067.
  1893 D.
Owen, R. 1843 A, p. 72.
  1845 B, pp. 311, 345.
  1851 C, p. 739.
  1866 B, p. 415.
  1868 A, p. 276.
Paquier, V, 1894 A, p. 18.
Parker, W. K. 1868 A, p. 217.
Roger, O. 1896 A, p. 75.
Ryder, J. A. 1885 D.
Schlosser, M. 1889 A.
  1890 A.
  1890 C.
Schmidt, O. 1886 A. p. 246.
Slade, D. D. 1888 A, p. 244.
Steinmann and Döderlein 1890 A, p. 705.
Struthers, J. 1871 A.
  1872 A.
  1881 A.
  1888 A.
  1893 A.
  1895 A.
Thomas, O. 1892 B.
Tomes, C. S. 1898 A. p. 375,
Trouessart, E. L. 1898 A. p. 1009.
Van Beneden, P. J. 1868 A. ("Cétacés.")
  1880 A.
  1882 A.
Van Beneden and Gervais 1880 A. ("Cétacés.")
Weber, M. 1886 A.
  1887 A.
  1888 A.
Weyhe, — 1875 A, p. 99.
Woodward, A. S. 1898 B, p. 269.
Wortman, J. L. 1886 A, p. 413.
Zittel, K. A. 1893 B, pp. 155, 183, 745.

Suborder ZEUGLODONTES.

Ameghino, F. 1896 A, pp. 393, 409. (Zeuglodontes.)
Brandt, J. F. 1873 A, p. 291. (Zeuglodontina.)
Cope, E. D. 1889 R, p. 876. (Archæoceti.)
  1890 E, p. 601. (Archæoceti.)
  1898 B, p. 108. (Archæoceti.)
Dames, W. 1894 B. (Archæoceti.)
Flower, W. H. 1883 A. (Archæoceti.)
  1883 D, p. 395. (Archæoceti.)
Flower and Lydekker 1891 A, p. 246. (Archæoceti.)
Gadow, H. 1898 A, p. 44. (Archæoceti.)
Gill, T. 1871 A. (Zeuglodontes.)
  1871 B. (Zeuglodontia.)
  1872 A, p. 301. (Zeuglodontia.)
  1872 B, p. v (<Zeuglodontia); p. 14 (<Zeuglodontes).
  1873 C.
Haeckel, E. 1895 A, p. 566, (Archiceta.)
Huxley, T. H. 1872 A, p. 349. (<Phocodontia.)
Lydekker, R. 1887 A, p. 49. (Archæoceti.)
Müller, J. 1847 E, p. 199. ("Zeuglodonten.")
  1849 A. ("Zeuglodonten.")
  1851 A. ("Zeuglodonten.")
Nicholson and Lydekker 1889 A, p. 1304. (Archæoceti.)
Pictet, F. J. 1853 A, p. 375. ("Zeuglodontes.")
Roger, O. 1896 A, p. 75. (Archæoceti.)
Thompson, D'A. W. 1890 A.
Trouessart, E. L. 1898 A, p. 1009. (Zeuglodonta.)
Weber, M. 1886 A, p. 235.
Woodward, A. S. 1898 B, p. 270. (Archæoceti.)
Zittel, K. A. 1893 B, p. 167.

BASILOSAURIDÆ.

Unless otherwise indicated, the following authors use the family name Zeuglodontidæ.

Brandt J. F. 1868 A, p. 351.
1873 A, pp. 11, 291.
1874 A, p. 28.
Burmeister, H. 1879 B, p. 580.
Cope, E. D. 1868 I, p. 184. (Basilosauridæ.)
1890 E, p. 601 (Zeuglodontidæ); p. 614 (Basilosauridæ).
Flower and Lydekker 1891 A, p. 246.
Gill, T. 1871 B, p. 122. (Basilosauridæ.)
1872 A, p. 301. (Basilosauridæ.)
Gill, T. 1873 C. (Basilosauridæ.)
Huxley, T. H. 1870 A.
Lydekker, R. 1887 A, p. 49.
1893 C.
Natural Science 1894 A.
Nicholson and Lydekker 1889 A, pp. 1301, 1304.
Owen, R. 1865 B.
Steinmann and Döderlein 1890 A, p. 706.
Trouessart, E. L. 1898 A, p. 1009.
Van Beneden, P. J. 1865 A, p. 65.
Zittel, K. A. 1893 B, p. 167.

BASILOSAURUS Harlan. Type *Zeuglodon cetoides* Owen.

Harlan, R. 1834 C.
Bartlett, J. 1846 A. (Zeuglodon.)
Blainville, H. M. D. 1864 A, iii, U, p. 134.
Brandt, J. F. 1873 A, p. 295. (Zeuglodon.)
1874 A, pp. 28, 47. (Zeuglodon.)
Bronn, H. G. 1838 A, p. 1070.
Buckley, S. B. 1843 A. (Zygodon.)
1846 A. (Basilosaurus.)
Burmeister, H. 1871 C. (Zeuglodon.)
Carus, C. G. 1847 A. (Hydrarchus.)
1849 A. (Zeuglodon.)
Conrad, T. A. 1840 A.
Cope, E. D. 1867 C, p. 155.
1889 C, p. 207.
Dames, W. 1883 B. p. 132. (Zeuglodon.)
1894 A, p. 219. (Zeuglodon.)
1894 B. (Zeuglodon.)
Dana, J. D. 1875 A. (Zeuglodon.)
1896 A, p. 931. (Zeuglodon.)
Delfortrie, E. 1874 A. (Zeuglodon.)
Emmons, E. 1845 A.
1845 B.
1846 A.
Flower, W. H. 1876 B, xiii, p. 450. (Zeuglodon.)
1883 A. (Zeuglodon.)
1883 D, p. 395. (Zeuglodon.)
Flower and Lydekker 1891 A, p. 246. (Zeuglodon.)
Gaudry, A. 1878 B, p. 39.
Geinitz, B. 1847 A.
Gibbes, R. W. 1847 B.
Giebel, C. G. 1847 C, p. 717. (Hydrarchos.)
Hammerschmidt, C. E. 1848 A.
Harlan, R. 1834 B, p. 77.
1834 C, p. 397.
1834 E.
1835 B, p. 282.
1835 D.
1835 F.
1839 A, p. 23.
Huxley, T. H. 1870 A. (Zeuglodon.)
1870 B, p. xlviii. (Zeuglodon.)
1872 A, p. 349. (Zeuglodon.)
Jaekel, O. 1891 D, p. 198. (Zeuglodon.)
Koch, A, 1845 A. (Hydrarchos, or Hydrargos.)
1851 A. (Zeuglodon.)
1851 B. (Zeuglodon.)
1857 B. (Zeuglodon.)
Leidy, J. 1869 A, p. 427.
Lister, G. 1846 A. (Zeuglodon.)
Lucas, F. A. 1895 A. (Zeuglodon.)
1900 C, p. 810.
Lydekker, R. 1887 A, p. 49. (Zeuglodon.)
1893 C, p. 558. (Zeuglodon.)
Marsh, O. C. 1877 E, p. 372.
Meyer, H. 1847 A.
Molin, R. 1859 A, p. 125. (Zeuglodon.)
Müller, J. 1847 A. (Basilosaurus.)
1847 B. (Zeuglodon.)
1847 C. (Zeuglodon.)
1847 E. (Zeuglodon.)
1849 A. (Zeuglodon.)
1851 A. (Zeuglodon.)
Natural Science 1894 A. (Zeuglodon.)
Nicholson and Lydekker 1889 A, p. 1304.
Osborn, H. F. 1898 D. (Zeuglodon.)
Owen, R. 1839 B, p. 24. (Zeuglodon; to replace Basilosaurus of Harlan.)
1841 C. (Zeuglodon.)
1845 B, p. 360. (Zeuglodon.)
1865 B. (Zeuglodon.)
Probst, J. 1886 A, p. 137. (Zeuglodon.)
Rogers, H. D. 1845 A. (Zeuglodon.)
Schlosser, M. 1890 A, p. 87. (Zeuglodon.)
Thompson, D'A. W. 1890 A.
Trouessart, E. L. 1898 A, p. 1009. (Zeuglodon.)
Van Beneden, P. J. 1861 A. (Zeuglodon.)
1865 A, p. 65. (Zeuglodon.)
Warren, J. C. 1854 D. (Zeuglodon.)
Weber, M. 1886 A, p. 233. (Zeuglodon.)
Woodward, A. S. 1898 B, p. 270.
Wyman J. 1850 E. (Zeuglodon.)
Zittel, K. A. 1893 B, p. 167.

Basilosaurus brachyspondylus (Müller).

Müller, J. 1847 B, p. 388. (Zeuglodon.)
Brandt, J. F. 1874 A, p. 47. (Zeuglodon.)
Cope, E. D. 1867 C, p. 155. (Doryodon.)
1890 E. p. 602. (Zeuglodon.)
Dames, W. 1883 B. p. 132. (Zeuglodon.)
1894 B. (Zeuglodon.)
Dana, J. D. 1875 A, p. 342. (Zeuglodon.)
Koch, A. 1845 A, p. 676. ("Zygodon," in part.)
1851 B, pl. vii. (Zeuglodon.)
Eocene; Alabama.

Basilosaurus cetoides (Owen).

Owen, R. 1841 C, p. 69, pls. vii–ix. (Zeuglodon.)

Agassiz L. 1848 A, p. 4. (Zeuglodon.)

Bouvé, T. T. 1859 A, p. 49. ("Zeuglodon.")

Buckley, S. B. 1843 A, p. 409. ("Zygodon.")

1846 A, p. 126. (Zeuglodon.)

Carus, C. G. 1847 A. (Hydrarchus harlani, in part.)

1849 A, p. 385, pl. xxxix A, fig. 4. (Zeuglodon.)

Cope, E. D. 1867 C, p. 156.

1868 I, p. 185. (Polyptychodon interruptus Emmons a synonym?.)

1890 E. p. 602 (Zeuglodon; p. 614 (Basilosaurus).

Dames W. 1883 B. p. 135, (Z. cetoides.)

1894 B. (Z. macrospondylus.)

Dana, J. D. 1875 A, p. 342. (Z. macrospondylus.)

1875 B. ("Hydrarchus harlani.")

1896 A, p. 908, fig. 1532. (Zeuglodon.)

De Kay, J. E. 1842 C, p. 123. (Z. harlani.)

Emmons, E. 1845 A, figures. (Zeuglodon.)

1845 B. (Zeuglodon).

1846 A, pls. i, ii. (Zeuglodon.)

1851 A. (Zeuglodon).

1858 B, p. 201, fig. 25. (Zeuglodon.)

Geinitz, H. B. 1847 A. ("Hydrarchus harlani.")

1847, in Carus, C. G. 1847 A, p. 1.

Gervais, P. 1874 B, p. 58, pl. xix, figs. 6, 7. (Zeuglodon.)

Gibbes, R. W. 1847 B, pl. i, figs. 1–4, 8.

1850 A.

Giebel, C. G. 1847 D.

Hammerschmidt, C. E. 1848 A. (B. kockii, B. harlani.)

Harlan, R. 1834 B, p. 77. ("Basilosaurus.")

1834 C, p. 397, pl. xx, figs. 1, 2. ("Basilosaurus.")

1835 D, p. 337. ("Basilosaurus.")

1835 F, p. 349, pls. xxvi–xxviii. (Basilosaurus.)

1839 A, p. 23. ("Basilosaurus.")

1839 B. ("Basilosaurus.")

1839 C. ("Basilosaurus.")

1840 A, p. 67. ("Basilosaurus.")

Koch, A. 1845 A. (Zeuglodon macrospondylus, Hydrarchus harlani.)

1845 B, p. 676. ("Zygodon," in part.)

1851 A. (Zeuglodon macrospondylus.)

1857 A. ("Zeuglodon.")

1857 B. (Zeuglodon macrospondylus.)

Leidy, J. 1869 A, p. 427.

1889 B, p. 95. (Zeuglodon.)

Lucas, F. A. 1895 B, p. 745. (Zeuglodon.)

1900 C, p. 809. (Basilosaurus.)

1900 E, p. 327, pls. v–vii. (Basilosaurus.)

Lydekker, R. 1887 A, p. 50. (Zeuglodon.)

Lyell, C. 1846 C, p. 409. ("Zeuglodon.")

Müller, J. 1847 A, p. 421. (Zeuglodon.)

1847 B. (Zeuglodon macrospondylus.)

1847 C. (Zeuglodon.)

1847 D. (Zeuglodon.)

1847 E, p. 193. (Zeuglodon macrospondylus.)

1849 A, plates. (Zeuglodon macrospondylus.)

1851 A. (Zeuglodon macrospondylus.)

Owen, R. 1839 B, p. 24. ("Zeuglodon.")

1845 B, p. 360, pl. xci. (Zeuglodon.)

1860 E, p. 345, figs. 108, 109. (Zeuglodon.)

Pictet, F. J. 1853 A, p. 378. (Zeuglodon macrospondylus, hydrarchus, trachyspondylus.)

Quenstedt, F. A. 1852 A, p. 78. (Zeuglodon.)

1885 A, p. 112. (Zeuglodon.)

Roger, O. 1896 A, p. 75. (Zeuglodon.)

Schuchert, C. 1900 A, p. 328.

Trouessart, E. L. 1898 A, p. 1009. (Zeuglodon.)

Tuomey, M. 1847 A, p. 283, figures. ("Zeuglodon.")

1847 B, p. 151. ("Zeuglodon.")

1847 C. ("Zeuglodon.")

Wailes, B. L. C. 1854 A, p. 277. (Zeuglodon harlani.)

Wyman, J. 1845 A. (Hydrarchos sillimani.)

Zittel, K. A. 1893 B, p. 168, figs. 131, 132. (Zeuglodon.)

Eocene; Alabama, Mississippi, Louisiana, Arkansas, Florida, North Carolina.

For identification of the figures of Müller's plates (Müller J. 1849 A.), see Leidy, J. 1869 A, p. 430. Additional synonomy may also be found there.

DORUDON Gibbes. Type *D. serratus* Gibbes.

Gibbes, R. W. 1845 A.

Agassiz, L. 1848 A.

Cope, E. D. 1867 C, p. 154. (Doryodon.)

1890 E, p. 602. (Doryodon.)

Gibbes, R. W. 1848 A.

Leidy, J. 1852 C. (Pontogeneus, type *P. priscus.*)

1869 A, p. 427.

Lucas, F. A. 1900 C, p. 810.

Müller, J. 1849 A, p. 1. (Syn. of Zeuglodon

1851 A. (Syn. of Zeuglodon.)

Owen, R. 1846 C.

1846 D.

Zittel, K. A. 1893 B, p. 168.

Dorudon serratus Gibbes.

Gibbes, R. W. 1845 A, p. 254, pl. i.

Agassiz, L. 1848 A, p. 254.

Amer. Jour. Science 1845 A, p. 218. ("Zeuglodon.")

Carus, C. G. 1847 A. (Hydrarchus harlani.)

1849 A, p. 369, pl. xxxix A, figs. 1–3; pl. xxxix B. (Zeuglodon hydrarchos.)

Cope, E. D. 1867 C, p. 155. (Doryodon.)

1868 I, p. 186. (Pontogeneus priscus; "Delphinoid.")

1869 G, p. 6. (Pontogeneus priscus.)

1890 E, p. 614. (Doryodon serratus.)

Dames, W. 1894 B.

Gibbes, R. W. 1845 A.

1847 B, p. 5, pl. ii, figs. 1–8; pl. iii, figs. 4–6. (Basilosaurus cetoides, in part.)

1848 A, p. 57.

Koch, A. 1845 B, p. 676. ("Zygodon," in part.)

1851 B, pl. vii. (Zeuglodon brachyspondylus.)

Leidy, J. 1852 C, p. 52. (Pontogeneus.)
1869 A, p. 428, pl. xxix, figs. 2–5.
Lydekker, R. 1887 A, p. 50. (Zeuglodon hydrarchus; syn.? of Z. cetoides.)
1892 B, p. 559. (Z. hydrarchus.)
Müller, J. 1847 C, p. 108. (D. serratus, syn. of Zeuglodon cetoides.)
1847 E, p. 193. (Zeuglodon brachyspondylus.)
1849 A, pl. i, fig. 1 (in part); pls. iii, iv; pl. v, fig. 1; pl. viii, figs. 3, 9, 10; pl. xii, fig. 11?; pl. xiii, figs. 1, 2, 6, 7; pl. xviii; pl. xix, figs. 1–5; pls. xx, xxi; pl. xxiii, fig. 4; pl. xxvi; pl. xxvii, figs. 1, 2, 6 (Zeuglodon brachyspondylus).
1851 A. (Zeuglodon brachyspondylus.)
Reichenbach, H. G. L., in Carus, C. G. 1847 A, p. 13. (Basilosaurus kochii.)
Trouessart, E. L. 1898 A, p. 1010. (Zeuglodon.)
Eocene; Alabama, South Carolina, Louisiana.
It is possible that *Dorudon serratus* and *Zeuglodon brachyspondylus* are distinct species.

Pontobasileus Leidy. Type *P. tuberculatus* Leidy.

Leidy, J. 1873 B, p. 337,
Trouessart, E. L. 1898 A, p. 1010.
Zittel, K. A. 1893 B, p. 167. (Syn. of Zeuglodon.)

Pontobasileus tuberculatus Leidy.

Leidy, J. 1873 B, p. 337, pl. xxxvii, fig. 15.
Trouessart, E. L. 1898 A, p. 1010.
Tertiary; Alabama?.

Saurocetus Agassiz. Type *S. gibbesii* Agassiz.

Agassiz, L. 1848 A.
Burmeister, H. 1871 C.
Cope, E. D. 1890 E, p. 615.
Leidy, J. 1869 A, p. 431.
Trouessart, E. L. 1898 A, p. 1010. (Syn. of Zeuglodon.)
Zittel, K. A. 1893 B. p. 171.
A genus of uncertain position.

Saurocetus gibbesii Agassiz.

Agassiz, L. 1848 A.
Eocene; South Carolina.
For additional references see under the genus.

Suborder Odontocete Flower.

Brandt, J. F. 1873 A, p. 202. (Odontocetoidea.)
Cope, E. D. 1889 R, p. 876. (Odontoceti.)
1890 E, p. 602. (Odontoceti.)
1898 B. p. 109. (Odontoceti.)
Dames, W. 1894 B, p. 36. (Odontoceti.)
Flower, W. H. 1864 A, p. 388. (Delphinoidea, or Odontocete.)
1867 A, p. 111. (Delphinoidea, or Odontocete.)
1868 A. (Physeter.)
1871 A. (Odontoceti.)
1876 B, xiii, p. 450. (Odontoceti.)
1883 D, p. 395. (Odontoceti.)
1885 A.
Flower and Lydekker 1891 A, p. 247. (Odontoceti.)
Gadow, H. 1898 A, p. 44. (Odontoceti.)
Gill, T. 1871 B, p. 122. (Denticete.)
1872 B, pp. 14, 93. (Denticete.)
1873 C, p. 26. (Denticetes.)
Gray, J. E. 1866 A, pp. 62, 194. (Denticete.)
Haeckel, E. 1895 A, p. 566. (Denticeta, part.)
Howes, G. B. 1888 A, p. 507. (Odontoceti.)
Huxley, T. H. 1872 A, p. 340. (Delphinoidea.)
Lydekker, R. 1887 A, p. 53. (Odontoceti.)
Nicholson and Lydekker 1889 A, p. 1305. (Odontoceti.)
Roger, O. 1896 A, p. 76. (Odontoceti.)
Schlosser M. 1890 C, p. 241.
Van Beneden and Gervais 1880 A, p. 298. ("Cétodontes.")
Woodward, A. S. 1898 B, p. 271.
Zittel, K. A. 1893 B, p. 168. (Odontoceti.)

SQUALODONTIDÆ.

Cope, E. D. 1867 C, p. 144. (Cynorcidæ.)
1889 R, p. 876.
1890 E, p. 602.
1895 A, p. 139.
Dames, W. 1894 B, p. 36. (Squalodontidæ, Mesoceti.)
Flower, W. H. 1883 D, p. 397.
Flower and Lydekker 1891 A, p. 257.
Gill, T. 1872 B, p. 14. (Cynorcidæ.)
Lydekker, R. 1887 A, p. 75.
Nicholson and Lydekker 1889 A, p. 1306.
Owen, R. 1865 B.
Roger, O. 1896 A, p. 76.
Steinmann and Döderlein 1890 A, p. 706.
Van Beneden, P. J. 1865 A. ("Squalodons.")
Zittel, K. A. 1893 B, p. 169.

Squalodon Grateloup. Type *Delphinoides grateloupii* Pedroni.

Grateloup, J. P. S. 1840 A, p. 208.
Agassiz, L. 1841 A. (Phocodon, type *P. scillæ.*)
Ameghino, F. 1896 A, p. 510.
Brandt, J. F. 1873 A, pp. 299, 315.
1874 A, p. 28.
Cope, E. D. 1867 C, p. 150 (Squalodon; Cynorca, type *C. proterva*); p. 151 Colophonodon).
1868 I, p. 185. (Cynorca.)
Dames, W. 1894 B, p. 19.
Depéret, C. 1887 A, p. 278.

Flower and Lydekker 1891 A, p. 257.
Gervais, P. 1859 A, p. 309.
1862 A.
1876 A. (Phocodon.)
Gaudry, A. 1878 B, p. 30.
Gibbes, R. W. 1847 B.
Jourdan, — 1861 A, p. 370 (Rhizoprion, type *R. bariensis*); p. 371 (Squalodon).
Leidy, J. 1853 C, p. 377. (Colophonodon, type *C. holmesii.*)
1856 K, p. 220. (Macrophoca, type *M. atlantica.*)
1869 A, p. 416.
Longhi, P. 1899 A, p. 374.
Lydekker, R. 1887 A, p. 75.
Meyer, H. 1840 A.
1841 A.
1847 A. (Squalodon, Pachyodon.)
Molin, R. 1859 A, p. 125. (Squalodon, Pachyodon.)
Müller, J. 1847 C. (Squalodon, syn. of Zeuglodon.)
1849 A, p. 29.
Nicholson and Lydekker 1889 A, p. 1306.
Osborn, H. F. 1898 D, p. 14.
Owen, R. 1845 B, p. 564. (Phocodon.)
1865 B.
1866 B, p. 405. (Squalodon, Phocodon.)
Paquier, V. 1894 A.
Pictet, F. J. 1853 A, p. 379.
Probst, J. 1885 A.
1886 A, p. 105.
Quenstedt, F. A. 1885 A, p. 113.
Roger, O. 1896 A, p. 76.
Steinmann and Döderlein 1890 A, p. 706.
Trouessart, E. L. 1898 A, p. 1011.
Van Beneden, P. J. 1861 A.
1865 A, p. 64.
Van Beneden and Gervais 1880 A, pp. 426, 519 (Squalodon); p. 451 (Phocodon).
Weber, M. 1886 A, p. 233.
Woodward, A. S. 1898 B, p. 272.
Zittel, K. A. 1893 B, p. 170.

Squalodon atlanticus Leidy.

Leidy, J. 1856 K, p. 220. (Macrophoca.)
Cope, E. D. 1867 B, p. 132.
1867 C, p. 151. (Colophonodon.)
1869 N, p. 739.
1875 H, p. 368.
1890 E, p. 603.
Leidy, J. 1869 A, p. 416, pl. xxviii, figs. 4-7; pl. xxx, fig, 18.
Lydekker, R. 1887 A, p. 77.
Roger, O. 1896 A, p. 77.
Van Beneden and Gervais 1880 A, p. 440.
Miocene; New Jersey, Maryland.

Squalodon debilis (Leidy).

Leidy, J. 1856 N, p. 265. (Phoca.)
Allen, J. A. 1880 A, p. 473. (Squalodon?)
Cope, E. D. 1867 C, p, 144.
Leidy, J. 1869 A, p. 415, pl. xxviii, figs. 12, 13. (Phoca.)
Roger, O. 1896 A, p. 74. (Phoca.)
Trouessart, E. L. 1898 A, p. 1014.
Zittel, K. A. 1893 B, p. 684. (Phoca.)
Eocenc; South Carolina.

Squalodon holmesii Leidy.

Leidy, J. 1853 C, p. 377. (Colophonodon.)
Cope, E. D. 1867 C, pp. 144, 153.
1890 E, p. 603.
Leidy, J. 1869 A, p. 418, pl. xxviii, figs. 15-17; pl. xxix, fig. 9.
Roger, O. 1896 A, p. 77.
Trouessart, E. L. 1898 A, p. 1015.
Eocene; South Carolina.

Squalodon? modestus (Leidy).

Leidy, J. 1869 A, p. 415, pl. xxviii, fig. 14. (Phoca.)
Allen, J. A. 1880 A, p. 474. ("Squalodont.")
Roger, O. 1896 A, p. 74. (Phoca.)
Zittel, K. A. 1893 B, p. 684. (Phoca.)
Eocene; South Carolina.

Squalodon pelagius Leidy.

Leidy, J. 1869 A, p. 420, pl. xxix, fig. 1.
Cope, E. D. 1890 E, p. 615.
Roger, O. 1896 A, p. 77.
Trouessart, E. L. 1898 A, p. 1015.
Eocene; South Carolina.

Squalodon protervus Cope.

Cope, E. D. 1867 C, pp. 144, 152 (Cynorca); p. 151, in part (Squalodon).
1868 I, p. 185. (Cynorca.)
1890 E, p. 615.
Leidy, J. 1869 A, pp. 384, 423, pl. xxviii, figs. 18, 19.
Roger, O. 1896 A, p. 77.
Trouessart, E. L. 1898 A, p. 1015.
Eocene; South Carolina.

The original description refers almost wholly to a canine tooth of *Dicotyles.*

Squalodon tiedemani Allen.

Allen, J. A. 1887 A, pls. v, vi,
Trouessart, E. L. 1898 A, p. 1015. (S. tiedmanni.)
Eocene; South Carolina.

AGOROPHIUS Cope. Type *Zeuglodon pygmæus* Müller.

Cope, E. D. 1895 A, p. 139.
1896 J, p. 141.
Trouessart, E. L. 1898 A, p. 1069.

Agorophius pygmæus (Müller).

Müller, J. 1849 A, p. 29, pl. xxxiii, figs. 1, 2. (Zeuglodon.)
Agassiz, L., in Leidy, J. 1869 A, p. 420. (Phocodon holmesii.)
Cope, E. D. 1867 C, p. 155. (Doryodon.)
1868 I, p. 186. (Zeuglodon.)
1890 E, p. 615. (Squalodon pygæmus *errore.*)
1895 A, p. 139.
Dames, W. 1894 B. (Zeuglodon.)
Gervais, P. 1871 A, p. 138. (Squalodon.)
Gibbes, R. W. 1847 B, p. 8. ("Zeuglodon.")
Holmes, F. S. 1849 A, p. 197. ("Zeuglodon," "Basilosaurus.")
Leidy, J. 1854 A, p. 8. (Basilosaurus.)
1869 A, p. 420, pl. xxix, figs. 7, 8. (Squalodon.)
Lydekker, R. 1892 B, p. 559. (Doryodon.)

Müller, J. 1851 A, p. 242.
Roger, O. 1896 A, p. 77. (Squalodon.)
Trouessart, E. L. 1898 A, p. 1014 (Squalodon); p. 1069 (Agorophius).
Tuomey, M. 1847 A. ("Zeuglodon.")
1847 B. ("Zeuglodon.")
1847 C. ("Zeuglodon.")
Tuomey, M. 1848, Rept. Geol. S. C., p. 166. ("Zeuglodon.")
1849, Rept. Geol. S. C., p. 69. ("Zeuglodon.")
Van Beneden and Gervais 1880 A, p. 441. (Squalodon.)
Eocene; South Carolina.

GRAPHIODON Leidy. Type *G. vinearius* Leidy.

Leidy, J. 1870 R, p. 122.
1873 B, p. 337.
Trouessart, E. L. 1898 A, p. 1011. (Syn. of Squalodon?)

Graphiodon vinearius Leidy.

Leidy, J. 1870 R, p. 122.
Cope, E. D. 1890 E, p. 615. (Squalodon.)
Leidy, J. 1873 B, p. 337, pl. xxii, fig. 7.
Roger, O. 1896 A, p. 77. (Squalodon.)
Trouessart, E. L. 1898 A, p. 1015. (Squalodon?.)
Miocene; Massachusetts.

CETERHINOPS Leidy. Type *C. longifrons* Leidy.

Leidy, J. 1877 A, p. 230.
A genus of uncertain position.

Ceterhinops longifrons Leidy.

Leidy, J. 1877 A, p. 230, pl. xxxiv, fig. 7.
Tertiary (Phosphate beds); South Carolina.

PLATANISTIDÆ.

Brandt, J. F. 1874 A, p. 17. (Platanistinæ.)
Cope, E. D. 1869 G, p. 6.
1890 E, p. 603.
Flower, W. H. 1867 A, p. 113.
1868 B, p. 349.
Flower and Lydekker 1891 A, p. 257.
Gill, T. 1871 B, p. 123. (Platanistidæ, Rhabdosteidæ.)
1872 B, pp. 14, 95 (Platanistidæ); p. 15 (Rhabdosteidæ).
Huxley, T. H. 1872 A, p. 342.
Lydekker, R. 1893 C, p. 564.
Nicholson and Lydekker 1889 A, p. 1306.
Owen, R. 1868 A, p. 282. (Platanista.)
Paquier, V. 1894 A, p. 11.
Roger, O. 1896 A, p. 77.
Zittel, K. A. 1893 B, p. 171.

PLATANISTINÆ.

Brandt, J. F. 1874 A, p. 17.
Flower, W. H. 1867 A, p. 114.

CHAMPSODELPHIS Gervais. Type *C. macrogenius* Gervais.

Gervais, P., 1852, Zool. Paléont. Franc., ed. 1, p. 152.
Brandt, J. F. 1873 A, p. 263.
1874 A, p. 19.
Flower and Lydekker 1891 A, p. 259.
Longhi, P. 1899 A, p. 323.
Lydekker, R. 1887 A, p. 74.
Nicholson and Lydekker 1889 A, p. 1306.
Probst, J. 1886 A, pp. 106, 122.
Van Beneden and Gervais 1880 A, p. 482.
Zittel, K. A. 1893 B, p. 171.

Champsodelphis acutidens (Cope).

Cope, E. D. 1867 C, p. 145. (Priscodelphinus.)
Brandt, J. F. 1873 A, p. 286. (Priscodelphinus.)
Leidy, J. 1869 A, p. 433. (Priscodelphinus.)
Trouessart, E. L. 1898 A, p. 1020.
Van Beneden and Gervais 1880 A, p. 508.
Miocene; Maryland.

LOPHOCETUS Cope. Type *Delphinus calvertensis* Harlan.

Cope, E. D. 1867 C, p. 146.
1869 G, p. 6.
1890 E, p. 606.
Zittel, K. A. 1893 B, p. 173.
A genus of uncertain position.

Lophocetus calvertensis (Harlan).

Harlan, R. 1842 D, p. 195, 3 plates. (Delphinus.)
Brandt, J. F. 1873 A, p. 288.
Cope, E. D. 1866 H, p. 297. (Pontoporia.)
Cope, E. D. 1867 C, p. 146.
1890 E, pp. 606, 615.
Leidy, J. 1869 A, p. 435.
Roger, O. 1896 A, p. 79.
Trouessart, E. L. 1898 A, p. 1022.
Van Beneden and Gervais 1880 A, p. 512.
Zittel, K. A. 1893 B, p. 173.
Miocene; Maryland.

DELPHINODON Leidy. Type *Squalodon mento* Leidy.

Leidy, J. 1869 A, p. 424.
Cope, E. D. 1890 E, p. 615.
Leidy, J. 1869 A, p. 428. (Phocageneus, type *P. venustus* Leidy.)
Lydekker, R. 1887 A, p. 75. (Syn. of Squalodon.)
Trouessart, E. L. 1898 A, p. 1023.
Zittel, K. A. 1893 B, p. 170. (Syn. of Squalodon.)

Delphinodon mento Cope.

Cope, E. D. 1867 B, p. 132. (Squalodon.)
1867 C, pp. 151, 152. (Squalodon.)
1890 E, p. 615.
Leidy, J. 1869 A, p. 424, pl. xxx, figs. 7, 8, 9.
Roger, O. 1896 A, p. 79.
Trouessart, E. L. 1898 A, p. 1023.
Wyman, J. 1850 B, p. 230, figs. 5–7. ("Cetacean.")
Miocene; Maryland, South Carolina.

Delphinodon venustus (Leidy).

Leidy, J. 1869 A, p. 426, pl. xxix, fig. 10. (Phocageneus.)
Agassiz, L. in Wyman J. 1850 B, p. 230, fig. 4. ("Phocodon.")
Cope, E. D. 1867 C, p. 152. (Squalodon mento, in part.)
Cope, E. D. 1890 E, p. 615.
Roger, O. 1896, A, p. 79.
Trouessart, E. L. 1898 A, p. 1023.
Miocene; Virginia.

Delphinodon leidyi nom. nov.

Allen, J. A. 1880 A, p. 473. (D. wymani.)
Cope, E. D. 1867 C, pp. 151, 152. (Squalodon wymanii, in part.)
1890 E, p. 615. (D. wymanii.)
Leidy, J. 1856 N. p. 265. (Phoca wymani, in part.)
1869 A, p. 425, pl. xxx, figs. 10–12. (D. wymanii.)
Roger, O. 1896 A, p. 79. (D. wymanii.)
Trouessart, E. L. 1898 A, p. 1023. (D. wymanii.)
Wyman, J. 1850 B, p. 229, in part?. ("Seal.")
Miocene; Maryland.

The name *Delphinodon leidyi* is intended to replace *D. wymani* Leidy, which is the same, in part, as *Squalodon wymanii* Cope 1867 C, p. 152, but not same as *S. wymani* Cope 1867 B, p. 132. The type of *D. leidyi* is Leidy, J. 1869 A, pl. xxx, fig. 12.

See references under *Phoca wymani*.

PRISCODELPHINUS Leidy. Type *P. harlani* Leidy.

Leidy, J. 1851 G, p. 326.
Cope, E. D. 1868 I, pp. 186, 187 (Priscodelphinus); pp. 186, 190 (Tretosphys, type *T. gabbii*.
1869 G, p. 7. (Tretosphys.)
1890 E, pp. 604, 615.
Leidy, J. 1869 A, p. 433 (Priscodelphinus); p. 434 (Tretosphys.)
Trouessart, E. L. 1898 A, p. 1023.
Van Beneden and Gervais 1880 A, pp. 493, 510.
Zittel, K. A. 1893 B, p. 172.
Zittel, K. A. 1893 B, p. 173, fig. 134.
Miocene; New Jersey.

Priscodelphinus gabbii Cope.

Cope, E. D. 1868 I, p. 191. (Delphinapterus.)
Brandt, J. F. 1873 A, p. 287. (Tretosphys.)
Cope, E. D. 1869 G, pp. 6, 7, 8. (Tretosphys.)
1890 E, p. 615.
Leidy, J. 1869 A, p. 434. (Tretosphys.)
Roger, O. 1896 A, p. 78.
Trouessart, E. L. 1898 A, p. 1024.
Van Beneden and Gervais 1880 A, p. 512. (Tretosphys.)
Miocene; Maryland.

Priscodelphinus grandævus Leidy.

Leidy, J. 1851 G, p. 327. (Priscodelphinus.)
Brandt, J. F. 1873 A, p. 287. (Tretosphys.)
Cope, E. D. 1867 C, p. 144.
1868 I, p. 191. (Delphinapterus.)
1869 G, pp. 7, 9. (Tretosphys.)
1890 E, p. 604, figs. 2, 3.
Leidy, J. 1853 C, p. 377.
1854 A, p. 8.
1869 A, p. 434. (Tretosphys.)
Roger, O. 1896 A, p. 78.
Trouessart, E. L. 1898 A, p. 1024.
Van Beneden and Gervais 1880 A, p. 511. (Tretosphys.)

Priscodelphinus harlani Leidy.

Leidy, J. 1851 G, p. 326.
Brandt, J. F. 1873 A, p. 286.
Cope, E. D. 1867 C, p. 144.
1868 I, p. 188.
1869 N, p. 739.
1875 H, p. 363.
1890 E, p. 615. (Syn. of P. grandævus.)
Harlan, R. 1825 B, p. 232. ("Plesiosaurus.")
1834 B, p. 77. ("Plesiosaurus.")
1835 B, p. 321. ("Plesiosaurus.")
Leidy, J. 1853 C, p. 377.
1854 A, p. 8.
1865 A, p. 1.
1869 A, p. 433.
Roger, O. 1896 A, p. 78. (Syn. of P. grandævus.)
Trouessart, E. L. 1898 A, p. 1024.
Miocene; New Jersey.

Priscodelphinus lacertosus Cope.

Cope, E. D. 1868 I, p. 189 (Tretosphys); p. 190 (Delphinapterus lacertosus, D. hawkinsii).
1868 I, p. 190. (Delphinapterus, Tretosphys).
1869 G, p. 7. (Tretosphys.)
1869 N, p. 739. (Delphinapterus lacertosus, D. hawkinsii.)
1875 H, p. 363.
1890 E, p. 615.
Leidy, J. 1869 A, p. 434. (Tretosphys.)
Roger, O. 1896 A, p. 78.
Trouessart, E. L. 1898 A, p. 1024.
Van Beneden and Gervais 1880 A, p. 512.
Miocene; Maryland.

Priscodelphinus ruschenbergeri Cope.

Cope, E. D. 1868 I, p. 189. (Delphinapterus.)
Brandt, J. F. 1873 A, p. 287. (Tretosphys.)
Cope, E. D. 1869 G, pp. 7, 9. (Tretosphys.)
1890 E, p. 615.
Leidy, J. 1869 A, p. 435. (Tretosphys.)
Roger, O. 1896 A, p. 78.
Trouessart, E. L. 1898 A, p. 1024.
Van Beneden and Gervais 1880 A, p. 512. (Tretosphys.)
Miocene; Maryland.

Priscodelphinus uræus Cope.

Cope, E. D. 1869 G, pp. 7, 8. (Tretosphys.)
Brandt, J. F. 1873 A, p. 287. (Tretosphys.)
Cope, E. D. 1875 H, p. 363.
1890 E, p. 615.
Leidy, J. 1869 A, p. 435. (Tretosphys.)
Roger, O. 1896 A, p. 78.
Trouessart, E. L. 1898 A, p. 1024.
Van Beneden and Gervais 1880 A, p. 512.
Miocene; New Jersey, Maryland.

ZARHACHIS Cope. Type *Z. flagellator* Cope.

Cope, E. D. 1868 I, pp. 186, 189.
1869 G, p. 9.
1890 E, p. 604.
Leidy, J. H. 1869 A, p. 435.
Trouessart, E. L. 1898 A, p. 1024.
Zittel, K. A. 1893 B, p. 172.

Zarhachis flagellator Cope.

Cope, E. D. 1868 I, p. 189, in part.
Brandt, J. F. 1873 A, p. 287.
Cope, E. D. 1869 G, p. 9.
1890 E, p. 615.
Leidy, J. 1869 A, p. 435.
Roger, O. 1896 A, p. 78.
Trouessart, E. L. 1898 A, p. 1024.
Van Beneden and Gervais 1880 A, p. 512
Miocene; Maryland,

Zarhachis tysonii Cope.

Cope, E. D. 1869 G, p. 9.
Brandt, J. F. 1873 A, p. 288.
Cope, E. D. 1868 I, p. 189. (Z. flagellator, in part.)
1890 E, p. 615.
Leidy, J. 1869 A, p. 435.
Roger, O. 1896 A, p. 78.
Trouessart, E. L. 1898 A, p. 1025.
Van Beneden and Gervais 1880 A, p. 512.
Miocene; Maryland.

Zarhachis velox Cope.

Cope, E. D. 1869 G, pp. 9, 10.
Brandt, J. F. 1873 A, p. 288.
Cope, E. D. 1868 I, p. 189. (Z. flagellator, in part.)
1875 H, p. 363.
1890 E, p. 615.
Leidy, J. 1869 A, p. 615.
Roger, O. 1896 A, p. 78.
Trouessart, E. L. 1898 A, p. 1025.
Van Beneden and Gervais 1880 A, p. 512.
Miocene; Maryland.

IXACANTHUS Cope. Type *I. cœlospondylus* Cope.

Cope, E. D. 1868 G, p. 159.
Brandt, J. F. 1873 A, p. 286.
Cope, E. D. 1868 I, p. 187.
1875 H, p. 364. (Belosphys, type *B. spinosus.*)
1890 E, pp. 604, 615.
Leidy, J. 1869 A, p. 435.
Trouessart, E. L. 1898 A, p. 1025.
Zittel, K. A. 1893 B, p. 172.
Leidy, J. 1869 A, p. 435.
Trouessart, E. L. 1898 A, p. 1025.
Van Beneden and Gervais 1880 A, p. 513.
Miocene; Maryland, New Jersey?.

Ixacanthus atropius Cope.

Cope, E. D. 1868 I, p. 188. (Priscodelphinus.)
Brandt, J. F. 1873 A, p. 286. (Priscodelphinus.)
Cope, E. D. 1869 G, p. 6. (Priscodelphinus.)
1875 H, p. 364. (Belosphys.)
1890 E, p. 615.
Leidy, J. 1869 A, p. 433. (Priscodelphinus.)
Roger, O. 1896 A, p. 78.
Trouessart, E. L. 1898 A, p. 1025.
Van Beneden and Gervais 1880 A, p. 511. (Priscodelphinus.)
Miocene; Maryland.

Ixacanthus cœlospondylus Cope.

Cope, E. D. 1868 G, p. 159.
Brandt, J. F. 1873 A, p. 288.
Cope, E. D. 1868 I, p. 187.
1869 N, p. 739.
1875 H, p. 364.
1890 E, p. 604.

Ixacanthus conradi (Leidy).

Leidy, J. 1852 B, p. 35. (Delphinus.)
Brandt, J. F. 1873 A, p. 286. (Priscodelphinus.)
Cope, E. D. 1868 I, p. 188. (Priscodelphinus.)
1875 H, p. 364. (Belosphys.)
1890 E, p. 615.
Leidy, J. 1869 A, p. 433. (Priscodelphinus.)
Roger, O. 1896 A, p. 79.
Trouessart, E. L. 1898 A, p. 1025 (I. cœlospondylus); p. 1032 (Delphinus conradi).
Van Beneden and Gervais 1880 A, p. 511. (Priscodelphinus.)
Miocene; Virginia, Maryland.

Ixacanthus spinosus Cope.

Cope, E. D. 1868 I, p. 187. (Priscodelphinus.)
Brandt, J. F. 1873 A, p. 286. (Priscodelphinus.)
Cope, E. D. 1875 H, p. 364. (Belosphys.)
1890 E, p. 603, fig. 1; p. 615.
Leidy, J. 1869 A, p. 433. (Priscodelphinus.)
Roger, O. 1896 A. p. 78.
Trouessart, E. L. 1898 A, p. 1025.
Van Beneden and Gervais 1880 A, p. 511. (Priscodelphinus.)
Miocene; Maryland.

Ixacanthus stenus Cope.

Cope, E. D. 1868 I, p. 188. (Priscodelphinus.)
Brandt, J. F. 1873 A, p. 286.
Cope, E. D. 1875 H, p. 364. (Belosphys.)
1890 E, p. 615.
Leidy, J. 1869 A, p. 433. (Priscodelphinus.)
Roger, O. 1896 A, p. 79.
Trouessart, E. L. 1898 A, p. 1025.
Van Beneden and Gervais 1880 A, p. 511.
Miocene; Maryland.

AGABELUS Cope. Type *A. porcatus* Cope.

Cope, E. D. 1875 H, p. 363.
1890 E, pp. 604, 615.
Flower and Lydekker 1891 A, p. 260.
Trouessart, E. L. 1898 A, p. 1025.
Zittel, K. A. 1893 B, p. 174.

Agabelus porcatus Cope.

Cope, E. D. 1875 H, p. 363.
1890 E, pp. 604, 615.
Roger, O. 1896 A, p. 79.
Trouessart, E. L. 1898 A, p. 1025.
Miocene; New Jersey.

RHABDOSTEUS Cope. Type *R. latiradix* Cope.

Cope, E. D. 1867 B, p. 132.
Brandt, J. F. 1874 A, p. 13.
Cope, E. D. 1867 C, p. 145.
1890 E, p. 604.
Leidy, J. 1869 A, p. 435,
Trouessart, E. L. 1898 A, p. 1025.
Van Beneden and Gervais 1880 A, p. 513.
Zittel, K. A. 1893 B, p. 174.

Rhabdosteus latiradix Cope.

Cope, E. D. 1867 B, p. 132.
Brandt, J. F. 1873 A, p. 288.
Cope, E. D. 1867 C, p. 145.
1890 E, pp. 605, 607, fig. 4; p. 615.
Leidy, J. 1869 A, p. 435.
Roger, O. 1896 A, p. 79.
Trouessart, E. L. 1898 A, p. 1025.
Miocene; Maryland.

CETOPHIS Cope. Type *C. heteroclitus* Cope.

Cope, E. D. 1868 I, p. 184.
1890 E, p. 604.
Trouessart, E. L. 1898 A, p. 1025.
Zittel, K. A. 1893 B, p. 173.
A genus of doubtful position.

Cetophis heteroclitus Cope.

Cope, E. D. 1868 I, p. 185.
1890 E, pp. 603, 606.
Leidy, J. 1869 A, p. 431.
Roger, O. 1896 A, p. 79.
Trouessart, E. L. 1898 A, p. 1025.
Miocene; Maryland,

DELPHINIDÆ.

Albrecht, P. 1886 A, p. 344.
Brandt, J. F. 1873 A, p. 227.
Cope, E. D. 1868 I, p. 186.
1889 C, p. 207.
1890 E, p. 609.
Cuvier, G. 1834 A, viii, pp. 75-170, pls. ccxxii, ccxxiv.
Duvernoy, G. L. 1851 A. ("Dauphins.")
Flower, W. H. 1867 A, p. 113.
1868 B, p. 349.
1883 B.
1883 D, p. 398.
1885 A, p. 349.
Flower and Lydekker 1891 A, p. 260.
Gill, T. 1871 B, p. 123.
1872 B, pp. 14, 94.
Gray, J. E. 1866 A, p. 228.
Huxley, T. H. 1872 A, p. 342.
Lydekker, R. 1887 A, p. 78.
Nicholson and Lydekker 1889 A, p. 1307.
Osborn, H. F. 1888 F, p. 1075.
Owen, R. 1866 B, p. 424.
Roger, O. 1896 A, p. 79.
Trouessart, E. L. 1898 A, p. 1026.
True, F. W. 1889 A.
Weyhe, — 1875 A, p. 100.
Zittel, K. A. 1893 B, p. 174.

DELPHININÆ.

Brandt, J. F. 1873 A, p. 243.
Flower, W. H. 1867 A, p. 113.
Gill, T. 1872 B, p. 15. (Delphininæ, Globiocephalinæ.)
True, F. W. 1889 A, pp. 10, 13, 15[illegible].

DELPHINUS Linn. Type *D. delphis* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 77.
Brandt, J. F. 1873 A, p. 244.
Cope, E. D. 1868 I, p. 186.
Duvernoy, G. L. 1851 A. ("Dauphin.")
Flower, W. H. 1883 B, pp. 500, 511.
1883 D, p. 399.

Flower and Lydekker 1891 A, p. 271.
Gervais, P. 1859 A, p. 301.
Gray, J. E. 1866 A, p. 239.
Nicholson and Lydekker 1889 A, p. 1307.
Pictet, F. J. 1853 A, p. 381.
Trouessart, E. L. 1898 A, p. 1031.
True, F. W. 1889 A, pp. 44, 160.
Zittel, K. A. 1893 B, p. 175.

Delphinus occiduus Leidy.

Leidy, J. 1868 E, p. 197.
Brandt, J. F. 1873 A, p. 286.
Cope, E. D. 1890 E, p. 616.
Leidy, J. 1869 A, p. 431.
1871 C, p. 365.
Roger, O. 1896 A, p. 79.
Tomes, C. S. 1898 A, p. 376.
Trouessart, E. L. 1898 A, p. 1031.
Miocene; California.

Delphinus sp. indet.

Wyman, J. 1850 B, p. 231, figs. 5-7.
Leidy, J. 1869 A, p. 432.

DELPHINAPTERINÆ.

Gill, T. 1871 B, p. 124.
1872 B, p. 15.
True, F. W. 1889 A, pp. 10, 11.

DELPHINAPTERUS Lacépède. Type *D. leucas* Pall.

Lacépède, B. G. E., 1804, Hist. Nat. Cét., p. xli.
Brandt, J. F. 1873 A, p. 234.
Cope, E. D. 1868 I, p. 186.
1890 E, p. 609.
Dawson, J. W. 1883 A, p. 201. (Beluga.)
Flower, W. H. 1883 B, p. 505.
1889 A, p. 146.
Flower and Lydekker 1891 A, p. 262.
Gray, J. E., 1828, Spicelegia Zool., i, p. 2. (Beluga.)
1866 A, p. 307.
Lydekker, R. 1887 A, p. 78.
Probst, J. 1886 A, p. 129. (Beluga.)
True, F. W. 1889 A, p. 146.
Van Beneden and Gervais 1880 A, p. 531. (Beluga.)
Zittel, K. A. 1893 B, p. 176. (Beluga.)

Delphinapterus leucas Pall.

Cope, E. D. 1890 E, pl. xxi.
Dawson, J. W. 1883 A, p. 201. (Beluga catodon.)
1895 B. (B. catodon.)
Flower and Lydekker 1891 A, p. 262, fig. 91.
Owen, R. 1868 A, p. 281.
Trouessart, E. L. 1898 A, p. 1050.
True, F. W. 1889 A, p. 187, pl. xlvi, figs. 1, 2.
Recent; Arctic seas. Pleistocene; Ontario.

Delphinapterus orcina Cope.

Cope, E. D. 1875 V, p. 49.
1890 E, p. 610.
Roger, O. 1896 A, p. 80. (Beluga.)
Trouessart, E. L. 1898 A, p. 1051.
Miocene; North Carolina.

Delphinapterus vermontana (Thomp.).

Thompson, Z. 1850 A, p. 257, figs. 1-13. (Delphinus.)
Amer. Naturalist 1871 A. (Beluga.)
Brandt, J. F. 1873 A, p. 289. (Beluga.)
Cope, E. D. 1867 C, p. 144. (Beluga.)
1890 E, p. 610.
Dawson, J. W. 1878 A, supp., p. 28. (Beluga.)
1883 A, p. 201. (Beluga.)
Gilpin B, 1873 A. (Beluga vermontana?)
Honeyman, D. 1874 A. (Beluga.)
1874 B. (Beluga.)
Leidy, J. 1869 A, p. 436. (Beluga.)
Logan, W. E. 1863 A, p. 919. (Beluga.)
Thompson, Z. 1853 A, p. 15, figs. 1-13. (Beluga.)
1859 A, p. 299. (Beluga.)
Trouessart, E. L. 1898 A, p. 1051.
Pleistocene; Vermont, Quebec.

MONODON Linn. Type *M. monoceros* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 75.
Berthold, A. A. 1850 A.
Brandt, J. F. 1873 A, p. 231.
Clark, J. W. 1871 A.
Flower, W. H. 1883 B.
1883 D.
Flower and Lydekker 1891 A, p. 260.
Gray, J. E. 1866 A, p. 310.
Jaeger, G. 1851 A.
Leboucq, H. 1887 A, p. 203.
Lydekker, R. 1887 A, p. 78.
Nicholson and Lydekker 1889 A, p. 1307.
Owen, R. 1845 B, p. 347.
1868 A, p. 279, fig. 220.
Pictet, F. J. 1853 A, p. 384.
Smith, J. 1895 A, p. 331.
Van Beneden and Gervais 1880 A, p. 523.
Zittel, K. A. 1893 B, p. 176.

Monodon monoceros Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 75.
Barton, B. S. 1805 A, p. 98. ("Monodon.")
Brandt, J. F. 1873 A, p. 232.
Clark, J. W. 1871 A.
Flower, W. H. 1883 D, p. 398, fig. 49.
Flower and Lydekker 1891 A, p. 261, fig. 90.
Gray, J. E. 1866 A, p. 311.
Jaeger, G. 1857 A, p. 571.
Lydekker, R. 1887 A, p. 78.
Nicholson and Lydekker 1889 A, p. 1307.
Owen, R. 1845 B. p. 347, pl. lxxxvii. ("Monodon.")
Tomes, C. S. 1898 A, p. 381, fig. 174.
Trouessart, E. L. 1898 A, p. 1052.
Turner, H. N. 1872 A.
1873 A.
1876 A.
Van Beneden and Gervais 1880 A, p. 523, pl. xliv, figs. 6-9; pl. xlv.
Zittel, K. A. 1893 B, p. 176.
Recent; Arctic seas. Pleistocene; Alaska.

PHYSETERIDÆ.

Cope, E. D. 1889 C, p. 207.
1890 E, p. 606.
1895 A, p. 137. (Choneziphiidæ.)
Duvernoy, G. L. 1851 A. ("Les cachalots.")
Flower, W. H. 1867 A, p. 113.
1868 B, p. 345.
1883 D, p. 395.
Flower and Lydekker 1891 A, p. 247.
Gill, T. 1871 B, p. 123.
1872 B, pp. 15, 96. (Physeteridæ, Ziphiidæ.)
Gray, J. E. 1866 A, p. 195. (Catodontidæ.)
Huxley, T. H. 1872 A, p. 340.
Lydekker, R. 1887 A, p. 53.
Nicholson and Lydekker 1889 A, p. 1305.
Pouchet and Beauregard 1889 A.
Roger, O. 1896 A, p. 80.
Van Beneden, P. J. 1877 B. (Physeterula.)
Zittel, K. A. 1893 B, p. 176.

PHYSETERINÆ.

Brandt, J. F. 1873 A, p. 205.
Flower, W. H. 1867 A, p. 114.
1883 D, p. 395.
Gill, T. 1871 B, p. 124.
1872 B, pp. 15, 96.
Zittel, K. A. 1893 B, p. 177.

PHYSETER Linn. Type *P. macrocephalus* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 76.
Brandt, J. F. 1873 A, p. 205.
Cope, E. D. 1890 E, p. 606.
Flower, W. H. 1868 B.
1885 A.
Flower and Lydekker 1891 A, p. 248.
Gray, J. E. 1866 A, p. 210.
Harlan, R. 1834 B, pp. 74, 75. (Megistosaurus, Nephrosteon, synonyms of Physeter.)
1835 A, p. 76. (Megistosaurus.)
1835 B, p. 279. (Megistosaurus, Nephrosteon.)
Huxley, T. H. 1872 A, p. 340.
Leidy, J. 1856 L, p. 255. (Orycterocetus, type *O. quadratidens.*)
1857 A, p. 271. (Orycterocetus.)
1869 A, p. 436 (Orycterocetus); p. 444 (Physeter.)
1876 A, p. 176. (Dinoziphius.)
Owen, R. 1845 B, p. 353.
Probst, J. 1886 A.
Van Beneden and Gervais 1880 A, p. 303 (Physeter); p. 344 (Dinoziphius).
Zittel, K. A. 1893 B, p. 177.

Physeter carolinensis (Leidy).

Leidy, J. 1877 A, p. 216, pl. xxxiv, fig. 6. (Dinoziphius.)
Cope, E. D. 1890 E, p. 608. (Hoplocetus; may not refer to P. carolinensis.)

Physeter macrocephalus Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 76.
Flower, W. H. 1868 B, pls. lv–lxi.
Gibbes, R. W. 1850 B. ("Physeter.")
Gray, J. E. 1866 A, p. 212. (Physeter tursio.)
Harlan, R. 1828 A, p. 186.
1835 A, p. 76.
1835 B, p. 279. (Megistosaurus and Nephrosteon = Physeter macrocephalus.)
Jaeger, G. 1857 A, p. 573.
Leidy, J. 1869 A, p. 444.
Owen, R. 1845 B, p. 353, pls. lxxxix, lxxxix *a*.
1868 A, p. 281.
Rafinesque, C. S., 1833, Atlantic Journal, p. 12. ("Nephrosteon.")
Roger, O. 1896 A, p. 80.
Tomes, C. S. 1898 A, p. 378.
Trouessart, E. L. 1898 A, p. 1056.
Recent in warm seas: Pleistocene?; Louisiana. "A doubtful fossil."

Physeter vetus (Leidy).

Leidy, J. 1853 C, p. 378. (P. antiquus, preoccupied by Gervais.)
Brandt, J. F. 1873 A, p. 289. (Catodon.)
Cope, E. D. 1869 N, p. 739. (P. antiquus.)
1875 V, p. 50.
1890 E, p. 615.
Emmons, E. 1858 B, p. 212, fig. 34. (P. antiquus.)
Gibbes, R. W. 1847 B, p. 11. (P. macrocephalus?.)
1850 B. (Catodon.)
Leidy, J. 1860 B, p. 117, pl. xxiv, figs. 8, 9. (P. antiquus.)
1869 A, p. 436. (Catodon.)
Roger, O. 1896 A, p. 80.
Trouessart, E. L. 1898 A, p. 1055.
Pleistocene; South Carolina. Miocene; North Carolina, Virginia, New Jersey.

ORYCTEROCETUS Leidy. Type *O. quadratidens* Leidy.

Leidy, J. 1853 C, p. 378.
Cope, E. D. 1890 E, p. 607. (Syn. of Physeter.)
Leidy, J. 1857 A, p. 271.
1869 A, p. 436.
Trouessart, E. L. 1898 A, p. 1055. (Syn. of Physeter.)
Zittel, K. A. 1893 B, p. 177. (Syn. of Physeter.)

Orycterocetus cornutidens Leidy.

Leidy, J. 1856 L, p. 255, in part.
Brandt, J. F. 1873 A, p. 289.
Cope E. D. 1867 C, p. 144. (O. crocodilinus.)
1875 V, p. 50.
1890 E, p. 615. (Physeter.)
Emmons, E. 1858 B, p. 211, fig. 33.
Leidy, J. 1857 A, p. 271.
1869 A, p. 437.
Roger, O. 1896 A, p. 80. (Physeter.)
Trouessart, E. L. 1898 A, p. 1055. (Physeter.)
Miocene; North Carolina, Maryland.

Orycterocetus quadratidens Leidy.

Leidy, J. 1853 C, p. 378.
Brandt, J. F. 1873 A, p. 289.
Cope, E. D. 1875 V, p. 50.
1890 E, p. 615. (Physeter.)
Emmons, E. 1858 B, p. 210, fig. 32.
Leidy, J. 1856 L, p. 255. (O. cornutidens, in part.)
1857 A, p. 271.
1869 A, p. 436, pl. xxx, figs. 16, 17.
Roger, O. 1896 A, p. 81. (Physeter.)
Trouessart, E. L. 1898 A, p. 1055. (Physeter.)
Miocene; Virginia, North Carolina.

HYPOCETUS Lydekker. Type *Mesocetus poucheti* Moreno.

Lydekker, R. 1893 D, p. 7 (Hypocetus); p. 8 (Paracetus).
Ameghino, F. 1894 A, p. 437. (Diaphorocetus, to replace Mesocetus Moreno, preoccupied.)
Cope, E. D. 1895 A, p. 135. (Paracetus.)
Lydekker, R. 1896 B, p. 68.
Moreno, F. P. 1892 A, p. 395, pl. x. (Mesocetus, type M. *poucheti;* not Mesocetus of Van Beneden.)
Trouessart, E. L. 1898 A, p. 1052. (Diaphorocetus.)

Hypocetus mediatlanticus (Cope).

Cope, E. D. 1895 A, p. 135. (Paracetus.)
Roger, O. 1896 A, 81. (Paracetus.)
Trouessart, E. L. 1898 A, p. 1053. (Diaphorocetus.)
Miocene; Maryland.

HOPLOCETUS Gervais. Type *H. crassidens* Gervais.

Gervais, P. 1852, Zool. Paléont. Franc., ed. 1, p. 26.
Cope, E. D. 1890 E, p. 607.
Flower and Lydekker 1891 A, p. 251.
Leidy, J. 1869 A, p. 438.
Lydekker, R. 1887 A, p. 60.
Owen, R. 1846 B, p. 536. (Balænodon, type *B. physaloides;* may not be identical genus.)
Pictet, F. J. 1853 A, p. 388.
Probst, J. 1886 A, p. 106.
Van Beneden and Gervais 1880 A, p. 239.
Zittel, K. A. 1893 B, p. 177.

Hoplocetus obesus Leidy.

Leidy, J. 1868 E, p. 196.
Brandt, J. F. 1873 A, p. 290.
Cope, E. D. 1890 E, p. 608 (H. carolinensis); p. 615 (H. obesus).
Leidy, J. 1869 A, p. 438, pl. xxx, figs. 13–15.
Trouessart, E. L. 1898 A, p. 1054.
Miocene; California.

Professor Cope's name, *H. carolinensis*, more probably refers to *Physeter carolinensis;* or it may be due to a confusion of the two names.

ONTOCETUS Leidy. Type *O. emmonsi* Leidy.

Leidy, J. 1859 G, p. 162.
1869 A, p. 440.
A genus of doubtful position.

Ontocetus emmonsi Leidy.

Leidy, J. 1859 G, p. 162.
Brandt, J. F. 1873 A, p. 290.
Cope, E. D. 1867 C, p. 144.
1875 V, p. 51.
Emmons, E. 1860 A, p. 219.
Leidy, J. 1869 A, p. 440.
Trouessart, E. L. 1898 A, p. 1055. (Hoplocetus.)
Miocene; North Carolina.

ZIPHIINÆ.

Brandt, J. F. 1873 A, p. 209.
Flower, W. H. 1867 A, p. 114.
1872 A.
1883 D, p. 396.
Gill, T. 1872 B, p. 15.
Flower and Lydekker 1891 A, p. 251.
Gervais, P. 1850 A. (Ziphioides.)
Gervais, P. 1859 A, pp. 285, 291. ("Ziphidés.")
Lydekker R. 1887 A, p. 63.
Owen, R. 1889 A. (Ziphius.)
Probst, J. 1886 A, p. 108. (Ziphioidæ.)
Roger, O. 1896 A, p. 81.
Zittel, K. A. 1893 B, p. 178.

CHONEZIPHIUS Duvernoy. Type *Ziphius planirostris* Cuv.

Duvernoy, G. L. 1851 A, p. 61.
Brandt, J. F. 1873 A, p. 218.
Cope, E. D. 1890 E, pp. 607, 608, part.
Flower and Lydekker 1891 A, p. 257.
Gervais, P. 1859 A, p. 288.
Leidy, J. 1877 A, p. 218.
Lydekker, R. 1887 A, p. 64.
Owen, R. 1889 A, p. 35.
Pictet, F. J. 1853 A, p. 385.
Trouessart, E. L. 1898 A, p. 1059, part.
Van Beneden and Gervais 1880 A, p. 413.
Zittel, K. A. 1893 B, p. 178.

Choneziphius cœlops (Leidy).

Leidy, J. 1876 A, p. 81. (Eboroziphius.)
Cope, E. D. 1890 E, p. 616.
Leidy, J. 1877 A, p. 224, pl. xxx, fig. 5; pl. xxxi, fig. 3. (Eboroziphius.)

Roger, O. 1896 A, p. 82.
Trouessart, E. L. 1898 A, p. 1060.
Tertiary (Phosphate beds); South Carolina.

Choneziphius liops Leidy.

Leidy, J. 1876 A, p. 81.
Cope, E. D. 1890 E, p. 616.
Leidy, J. 1877 A, p. 222, pl. xxx, fig. 1; pl. xxxi, fig. 2.
Roger, O. 1896 A, p. 82.
Trouessart, E. L. 1898 A, p. 1060.
Tertiary (Phosphate beds); South Carolina.

Choneziphius trachops Leidy.

Leidy, J. 1876 A, p. 81.
Cope, E. D. 1890 E, pp. 608, 615.
Leidy, J. 1877 A, p. 218, pl. xxx, fig. 2; pl. xxxi, fig. 1.
Roger, O. 1896 A, p. 82.
Trouessart, E. L. 1898 A, p. 1060.
Tertiary (Phosphate beds); South Carolina.

PROROZIPHIUS Leidy. Type *P. macrops* Leidy.

Leidy, J. 1876 E, p. 87.
1877 A, p. 227.
Trouessart, E. L. 1898 A, p. 1060. (Syn. of Choneziphius.)

Proroziphius chonops Leidy.

Leidy, J. 1876 F, p. 114.
Cope, E. D. 1890 E, p. 616. (Choneziphius.)
Leidy, J. 1877 A, p. 229, pl. xxxii, figs. 3, 4.
Roger, O. 1896 A, p. 82. (Choneziphius.)
Trouessart, E. L. 1898 A, p. 1060. (Choneziphius.)
Tertiary (Phosphate beds); South Carolina.

Proroziphius macrops Leidy.

Leidy, J. 1876 E, p. 87.
Cope, E. D. 1890 E, p. 616.. (Choneziphius.)
Leidy, J. 1877 A, p. 227, pl. xxxii, figs. 1, 2.
Roger, O. 1896 A, p. 82. (Choneziphius.)
Trouessart, E. L. 1898 A, p. 1060. (Choneziphius.)
Tertiary (Phosphate beds); South Carolina.

PELYCORHAMPHUS Cope. Type *P. pertortus* Cope.

Cope, E. D. 1895 A, p. 137.

Pelycorhamphus pertortus Cope.

Cope, E. D. 1895 A, p. 137.
Trouessart, E. L. 1898 A, p. 1057.
Miocene. Locality unknown.

ANOPLONASSA Cope. Type *A. forcipata* Cope.

Cope, E. D. 1869 E, p. 189.
1869 O.
1890 F, p. 700.
1895 A, p. 138.
Trouessart, E. L. 1898 A, pp. 1003, 1057.
Zittel, K. A. 1893 B, p. 179.

Anoplonassa forcipata Cope.

Cope, E. D. 1869 E, p. 189, pl. v, fig. 5.
Brandt, J. F. 1873 A, p. 289.
Cope, E. D. 1869 O.
1890 F, p. 700, fig. 2.
Leidy, J. 1869 A, p. 436.
Roger, O. 1896 A, p. 82.
Trouessart, E. L. 1898 A, p. 103.
Van Beneden and Gervais 1880 A, p. 386, text figure.
Tertiary (Phosphate beds); South Carolina.

MESOPLODON Gervais. Type *Delphinus sowerbensis*.

Gervais, P. 1850 A, p. 16.
Brandt, J. F. 1873 A, p. 220. (Mesoödon.)
Cope, E. D. 1890 E, p. 607.
Flower, W. H. 1872 A p. 209.
Flower and Lydekker 1891 A, p. 254.
Forbes, H. O. 1893 A.
Gervais, P. 1850 A, p. 16. (Dioplodon.)
1859 A, p. 289 (Dioplodon); p. 290 (Mesoplodon).
Huxley, T. H. 1864 A, p. 388. (Micropteron; Belemnoziphius, type *B. compressus*.)
Leidy, J. 1876 A, p. 81. (Belemnoziphius.)
1877 A, p. 226. (Dioplodon.)
Owen, R. 1889 A, p. 38. (Belemnoziphius.)
Probst, J. 1886 A, p. 113.
Trouessart, E. L. 1898 A, p. 1063.
Van Beneden and Gervais 1880 A, p. 392 (Mesoplodon); pp. 403, 419 (Dioplodon).
Zittel, K. A. 1893 B, p. 179. (Mesoplodon, Dioplodon.)

Mesoplodon prorops (Leidy).

Leidy, J. 1876 A, p. 81. (Belemnoziphius.)
Cope, E. D. 1890 E, p. 616.
Leidy, J. 1877 A, p. 226, pl. xxx, figs. 3, 4. (Dioplodon.)
Roger, O. 1896 A. p. 82.
Trouessart, E. L. 1898 A, p. 1065.
Van Beneden, P. J. 1880 A. (Ziphius longirostris; =? M. prorops.)
Tertiary (Phosphate beds); South Carolina.

Suborder MYSTICETE.

Brandt, J. F. 1873 A, p. 17. (Balænoidea.)
Cope, E. D. 1889 R, p. 876. (Mystacoceti.)
    1890 E, p. 610. (Mysticete.)
    1898 B, p. 109. (Mysticete.)
Flower, W. H. 1864 A, p. 388. (Balænoidea, or Mysticete.)
    1867 A, p. 110. (Mystacoceti, or Balænoidea.)
    1876 B, xiii, p. 450. (Mystacoceti.)
    1883 D, p. 394. (Mystacoceti.)
Flower and Lydekker 1891 A, p. 234. (Mystacoceti.)
Gadow, H. 1898 A, p. 44. (Mystacoceti.)
Gill, T. 1871 B, p. 122. (Mysticete.)
    1872 B, pp. 16, 97. (Mysticete.)
Gill, T. 1873 C, p. 25. (Mysticete.)
Gray, J. E. 1866 A, pp. 68, 194. (Mysticete.)
Haeckel, E. 1895 A, p. 566. (Mysticeta.)
Huxley, T. H. 1872 A, p. 336. (Balænoidea.)
Kükenthal, W. 1891 A, p. 365. ("Bartenwale.")
Leboucq, H. 1887 A. ("Mysticétes.")
Murie, J. 1865 A.
Roger, O. 1896 A, p. 83. (Mystacoceti.)
Ryder, J. 1878 A.
Van Beneden, P. J. 1880 B, p. 11. ("Mysticétes.")
Van Beneden and Gervais 1880 A, pp. 29, 239. ("Mysticétes.")
Woodward, A. S. 1898 B, p. 273. (Mystacoceti.)
Zittel, K. A. 1893 B, p. 180. (Mystacoceti.)

BALÆNIDÆ.

Brandt, J. F. 1873 A, p. 18 (Balænidæ); p. 26. (Balænopteridæ).
Carte and Macalister 1868 A. (>Balænopteridæ.)
Cope, E. D. 1889 R, p. 876.
    1890 E, p. 611.
    1895 A, p. 139.
Cuvier, G. 1834 A, viii, pt. ii, pp. 249–332. ("Baleines.")
Duvernoy, G. L. 1851 A. ("Les Baleines.")
Flower, W. H. 1864 A. (Balænidae, Balænopteridæ.)
    1867 A, p. 115. (>Balænopterinæ.)
    1876 B, xiii, p. 450. (Balænidae, Balænopteridæ.)
    1883 D, p. 394.
Flower and Lydekker 1891 A, p. 234.
Gervais, P. 1871 A.
Gray, J. E. 1866 A, p. 75 (Balænidæ); p. 106 (Balænopteridæ).
Holder, J. B. 1883 A.
Huxley, T. H. 1872 A, p. 339.
Kükenthal, W. 1890 C.
Marsh, O. C. 1877 E.
Murie, J. 1865 A. (Balænopteridæ.)
Nicholson and Lydekker 1889 A, p. 1302.
Owen, R. 1866 B, p. 415.
    1868 A, p. 276.
Roger, O. 1896 A, p. 83 (Balænidae); p. 87 (Balænopteridæ).
Struthers, J. 1871 A. (>Balænopteridæ.)
    1872 A. (>Balænopteridæ.)
    1881 A. (>Balænidæ.)
    1893 A. (Balænidae, Balænopteridæ.)
    1895 A. (>Balaenidæ.)
Van Beneden P. J. 1872 A. (>Balænidæ.)
    1880 A. (>Balænidæ.)
    1882 A. (Balænidæ, Balænopteridæ.)
Zittel, K. A. 1893 B, p. 181 (Balaenidæ); p. 183 (Balænopteridæ).

METOPOCETUS Cope. Type *M. durinasus* Cope.

Cope, E. D. 1896 J, p. 141.

Metopocetus durinasus Cope.

Cope, E. D. 1896 J, p. 141, pl. xi, fig. 3.
Trouessart, E. L. 1898 A, p. 1069.
    Miocene; Maryland.

CEPHALOTROPUS Cope. Type *C. coronatus* Cope.

Cope, E. D. 1896 J, pp. 141, 143.

Cephalotropus coronatus Cope.

Cope, E. D. 1896 J, p. 143, pl. xi, fig. 2.
Trouessart, E. L. 1898 A, p. 1069.
    Miocene; Maryland?.

CETOTHERIUM Brandt. Type *C. rathkii* Brandt.

Brandt, J. F., 1843, Bull. Acad. Imp. St. Petersb., i, p. 145.
    1844 A.
    1873 A, pp. 61, 142, 143.
Cope, E. D. 1869 G, p. 10. (Eschrichtius.)
    1890 E, p. 612.
    1895 A, p. 140.
    1896 J, p. 141.
Flower and Lydekker 1891 A, p. 245.
Gaudry, A. 1878 B, p. 32. (Plesiocetus.)
Gray, J. E. 1866 A, p. 131, figs. 21, 22. (Eschrichtius.)
Lydekker, R. 1887 A, p. 42.
    1893 D, pt. ii, p. 2.
Pictet, F. J. 1853 A, p. 388.
Van Beneden, P.-J. 1872 A, p. 416.
    1872 B, p. 15 (Plesiocetus); p. 16 (Cetotherium).
    1875 A. (Plesiocetus.)
    1880 B, p. 17. (Plesiocetus.)
Van Beneden and Gervais 1880 A, p. 268. (Cetotherium); p. 274 (Plesiocetus).
Zittel, K. A. 1893 B, p. 181 (Plesiocetus); p. 182 (Cetotherium).

Cetotherium cephalum Cope.

Cope, E. D. 1867 B, p. 131. (Eschrichtius.)
1867 C, p. 148. (Eschrichtius.)
1869 G, pp. 10, 11. (Eschrichtius.)
1890 E, p. 613, pl. xxii, text fig. 7.
1891 N, fig. 39.
1896 J, p. 146, pl. xii, fig. 2.
Dana, J. D. 1896 A, p. 912, fig. 1589.
Leidy, J. 1869 A, p. 442. (Eschrichtius.)
Roger, O. 1896 A, p. 84.
Trouessart, E. L. 1898 A, p. 1071.
Miocene; Maryland.

Cetotherium davidsonii Cope.

Cope, E. D. 1872 Z, p. 29. (Eschrichtius.)
Bowers, S. 1889 A. (Eschrichtius.)
Cope, E. D. 1890 E, p. 616. (Balænoptera.)
1896 J, p. 146, pl. xii, fig. 4.
Roger, O. 1896 A, p. 86. (Balænoptera.)
Trouessart, E. L. 1898 A, p. 1079. (Referred to Balænoptera davidsoni Scammon.)
Miocene; California.

Cetotherium leptocentrum Cope.

Cope, E. D. 1867 C, p. 147. (Eschrichtius.)
1869 G, p. 11. (Eschrichtius.)
1890 E, p. 616.
1895 A, p. 148. (C. crassangulum.)
1896 J, p. 145, pl. xii, fig. 1.
Leidy, J. 1869 A, p. 442.
Roger, O. 1896 A, p. 84 (C. leptocentrum); p. 85 (C. crassangulum).
Trouessart, E. L. 1898 A, p. 1071.
Miocene; Virginia.

Cetotherium megalophysum Cope.

Cope, E. D. 1895 A, p. 146.
1896 J, p. 143, pl. xi, fig. 1.
Roger, O. 1896 A, p. 84.
Trouessart, E. L. 1898 A, p. 1071.
Miocene; Maryland?.

Cetotherium mysticetoides (Emmons).

Emmons, E. 1858 B, p. 205, fig. 26. (Balæna.)
Cope, E. D. 1875 V, p. 42. (Eschrichtius.)
1890 E, p. 616.
Leidy, J. 1869 A, p. 440. (Balæna.)
Roger, O. 1896 A, p. 84 (Cetotherium); p. 87 (Balæna).
Trouessart, E. L. 1898 A, p. 1071 (Cetotherium); p. 1092 (Balæna).
Van Beneden, P. J. 1882 A, p. 23.
Miocene; North Carolina.

Cetotherium parvum Trouessart.

Trouessart, E. L. 1898 A, p. 1071. (To replace C. pusillum Cope, not of Nordmann.
Cope, E. D. 1868 G, p. 159. (Balænoptera pusilla.)
1868 I, p. 190 (?Delphinapterus tyrannus); p. 191 (Eschrichtius pusillus).
1869 G, p. 7 (?Delphinapterus tyrannus); p. 11 (Eschrichtius pusillus).
1890 E, p. 616. (C. pusillum).
1895 A, p. 145. (C. pusillum.)
Leidy, J. 1869 A, p. 442. (Eschrichtius pusillus.)
Roger, O. 1896 A, p. 84. (C. pusillum.)
Miocene; Maryland, South Carolina.

Cetotherium polyporum Cope.

Cope, E. D. 1869 I. (Eschrichtius.)
1870 F, p. 285. (Eschrichtius.)
1875 V, p. 42, pl. v, figs. 3, 3*a*. (Eschrichtius.)
1890 E, p. 616.
1895 A, p. 149, pl. vi, fig. 7.
Roger, O. 1896 A, p. 84.
Trouessart, E. L. 1898 A, p. 1071.
Miocene; North Carolina.

SIPHONOCETUS Cope. Type *Balæna priscus* Leidy.

Cope, E. D. 1895 A, p. 140.
Trouessart, E. L. 1898 A, p. 1074.

Siphonocetus clarkianus Cope.

Cope, E. D. 1895 A, p. 140, pl. vi, fig. 4.
Roger, O. 1896 A, p. 85.
Trouessart, E. L. 1898 A, p. 1074.
Miocene; Maryland.

Siphonocetus expansus Cope.

Cope, E. D. 1868 I, p. 193. (Megaptera.)
1869 G, p. 11. (Eschrichtius.)
1890 E, p. 616. (Cetotherium.)
1895 A, p. 140. pl. vi, fig. 5.
Leidy, J. 1869 A, p. 442. (Eschrichtius.)
Roger, O. 1896 A, p. 85.
Trouessart, E. L. 1898 A, p. 1074.
Miocene; Virginia, Maryland.

Siphonocetus priscus (Leidy).

Leidy, J. 1851 F, p. 308. (Balæna.)
Cope, E. D. 1867 B, p. 132. (Balæna.)
1867 C, p. 144. (Balænoptera.)
1868 I, p. 193. (Balænoptera.)
1869 G, pp. 10, 11. (Eschrichtius.)
1890 E, p. 616. (Cetotherium.)
1895 A, p. 140, pl. vi, fig. 3.
Leidy, J. 1869 A, p. 441. (Eschrichtius.)
Roger, O. 1896 A, p. 85.
Trouessart, E. L. 1898 A, p. 1074.
Miocene; Virginia.

ULIAS Cope. Type *U. moratus* Cope.

Cope, E. D. 1895 A, p. 141.
Trouessart, E. L. 1898 A, p. 1074.

Ulias moratus Cope.

Cope, E. D. 1895 A, p. 141, pl. vi, fig. 1.
Roger, O. 1896 A, p. 85.
Miocene; Maryland?

TRETULIAS Cope. Type *T. buccatus* Cope.

Cope, E. D. 1895 A, p. 143.
Trouessart, E. L. 1898 A, p. 1074.

Tretulias buccatus Cope.

Cope, E. D. 1895 A, p. 143, pl. vi, fig. 2.
Roger, O. 1896 A, p. 85.
Trouessart, E. L. 1898 A, p. 1074.
Miocene; Maryland?.

MESOCETUS Van Beneden. Type *M. longirostris* Van Beneden.

Van Beneden, P. J. 1880 B, p. 22.
Cope, E. D. 1895 A, p. 153.
Van Beneden, P. J. 1882 B.

Mesocetus siphunculus Cope.

Cope, E. D. 1895 A, p. 153.
Cope, E. D. 1896 J, p. 146, pl. xii, fig. 6.
Roger, O. 1896 A, p. 85.
Trouessart, E. L. 1898 A, p. 1076.
Miocene; Virginia.

RHEGNOPSIS Cope. Type *Balæna palæatlanticus* Leidy.

Cope, E. D. 1896 J, p. 145.
Leidy, J. 1869 A, p. 440 (Protobalæna, type *B. palæatlanticus;* preocc. by Van Beneden, 1867).
Trouessart, E. L. 1898 A, p. 1077.

Rhegnopsis palæatlanticus (Leidy).

Leidy, J. 1851 F, p. 308. (Balæna.)
Cope, E. D. 1867 B, p. 132. (Balæna.)
Cope, E. D. 1867 C, p. 147. (Balæna.)
1868 I, p. 198. (Balænoptera.)
1890 E, p. 616. (Balænoptera.)
1896 J, p. 145, pl. xii, fig. 5.
Leidy, J. 1869 A, p. 440. (Protobalæna.)
Roger, O. 1896 A, p. 86. (Balænoptera.)
Trouessart, E. L. 1898 A, p. 1077.
Miocene; Virginia.

BALÆNOPTERA Lacépède.

Lacépède, B. G. É., 1804, Hist. Nat. d. Cétacés; Tab. ord., p. xxxvi.
Brandt, J. F. 1873 A, p. 27.
Carte and Macalister 1869 A.
Cope, E. D. 1890 E, p. 612.
Flower, W. H. 1864 A, p. 373.
1885 A.
Flower and Lydekker 1891 A, p. 242.
Gray, J. E. 1866 A, pp. 186, 382.
Lydekker, R. 1887 A, p. 34.
Murie, J. 1865 A. (Physalus.)
Struthers, J. 1871 A.
Struthers, J. 1872 A.
Struthers, J. 1893 A.
Tomes, C. S. 1898 A, p. 383.
Van Beneden, P. J. 1880 B, p. 14.
1882 A, p. 61.
Van Beneden and Gervais 1880 A, p. 137.
Zittel, K. A. 1893 B, p. 182.

Balænoptera sursiplana Cope.

Cope, E. D. 1895 A, p. 151.
Roger, O. 1896 A, p. 86.
Trouessart, E. L. 1898 A, p. 1077.
Miocene; Maryland.

MEGAPTERA Gray. Type *M. longimana.*

Gray, J. E., 1846, Zool. "Erebus" and "Terror," p. 16.
Flower, W. H. 1864 A.
1883 D, p. 394.
Flower and Lydekker 1891 A, p. 241.
Gervais, P. 1871 A.
Gray, J. E. 1866 A, p. 117.
Lydekker, R. 1887 A, p. 31.
Struthers, J. 1885 A.
1888 A.
Van Beneden, P. J. 1868 A.
1880 B, p. 13.
1882 A, p. 26.
Van Beneden and Gervais 1880 A, p. 116.
Zittel, K. A. 1893 B, p. 182.

Megaptera boops (Linn).

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 76. (Balæna.)
Dawson, J. W. 1883 A, p. 202. (M. longimana.)
Flower and Lydekker 1891 A, p. 241, fig. 79.
Gervais, P. 1871 A.
Gray, J. E. 1866 A, p. 119, figs. 14–18. (M. longimana.)
Struthers, J. 1885 A, p. 124.
1888 A.
Trouessart, E. L. 1898 A, p. 1085.
Van Beneden and Gervais 1880 A, p. 120, pl. x; pl. xi, figs. 1–8.
Recent in North Atlantic: Pleistocene; Ontario.

MESOTERAS Cope. Type *M. kerrianus* Cope.

Cope, E. D. 1870 R, p. 128.
1870 F, p. 286.
1875 V, p. 44, pl. viii, fig. 1.
1890 E, p. 613.
Zittel, K. A. 1893 B, p. 183.

Mesoteras kerrianus Cope.

Cope, E. D. 1870 R, p. 128.
Cope, E. D. 1870 F, p. 286.
1875 V, p. 44.
1890 E, pp. 613, 616.
Roger, O. 1896 A, p. 86.
Trouessart, E. L. 1898 A, p. 1088.
Miocene; North Carolina.

BALÆNA Linn. Type *B. mysticetus* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 75.
Flower, W. H. 1864 A, p. 390.
1883 D, p. 395.
1885 A.
Flower and Lydekker 1891 A, p. 236.
Gervais, P. 1871 A.
Gray, J. E. 1866 A, p. 79.
Holder, J. B. 1883 A.
Huxley, T. H. 1872 A, p. 337.
Lydekker R. 1887 A, p. 16.
Nicholson and Lydekker 1889 A, p. 1308.
Owen, R. 1866 B, p. 415.
Parker, W. K. 1868 A, p. 217.
Pictet, F. J. 1853 A, p. 387.
Struthers, J. 1881 A.
1893 A,
1895 A.
Roger, O. 1896 A, p. 87.
Trouessart, E. L. 1898 A, p. 1089.
Van Beneden and Gervais 1880 A, p. 32.
Zittel, K. A. 1893 B, p. 183.

Balæna affinis Owen.

Owen, R, 1846 B, p. 530, fig. 221.
Cope, E. D. 1895 A, p. 152.
Emmons, E. 1858 B, p. 206. (Doubtful identification.)
Lydekker, R. 1887 A, p. 17, fig. 7.
Zittel K. A. 1893 B, p. 183.

Miocene; England, Maryland?, North Carolina.

For citations to descriptions of uncertain and unidentified remains of Cete see Leidy 1869 A, p. 443.

Order UNGULATA.

Baur, G. 1884 F.
Cope, E. D. 1873 E, p. 561.
1873 F.
1875 C, p. 26.
1881 I.
1882 Y.
1883 D.
1883 FF.
1884 E.
1885 O.
1885 U.
1887 I.
1887 N.
1888 T.
1889 C.
1889 R, pp. 875, 876.
Flower, W. H. 1883 D, p. 421.
1885 A.
Flower and Lydekker 1891 A, p. 273.
Gadow, H. 1898 A, p. 45.
Gegenbaur, C. 1898 A.
Gill, T. 1872 A, p. 298.
1872 B, pp. 8, 47, 70.
Haeckel, E. 1895 A, p. 524.
Huxley, T. H. 1872 A, p. 292.
Kowalevsky, W. 1873 A, p. 152.
1874 A.
Leuthardt, F. 1891 A, p. 93.
Lydekker, R. 1885 C.
1886 A.
1886 B.
1896 B.
Marsh, O. C. 1877 E.
1884 F, p. 173.
Mettam, A. E. 1895 A.
Nicholson and Lydekker 1889 A, p. 1312.
Osborn, H. F. 1890 D.
1892 H.
1892 I.
1893 A, p. 379.
1893 D.
Owen R. 1845 B, p. 523.
1851 C, p. 735.
1868 A, p. 340.
Parker, W. K. 1868 A, p. 219. (Herbivora.)
Paulli, S. 1900 A.
Pavlow, M. 1888 A.
1890 A.
1892 A.
Roger, O. 1896 A, p, 142.
Rütimeyer, L. 1888 A.
1891 A.
Ryder, J. A. 1878 A.
Schlosser, M. 1885 A.
1886 A.
1886 B.
1887 A.
1890 D.
1892 A, p. 216.
Schmidt, O. 1886 A, p. 126.
Slade, D. D. 1888 A, p. 244.
1893 A.
Steinmann and Döderlein 1890 A, p. 746.
Taeker, J. 1892 A.
Tomes, C. S. 1898 A, p. 390.
Trouessart, E. L. 1898 A, p.
Turner, H. N. 1848 A.
Wiedersheim, R. 1881 A, p. 360.
Woodward, A. S. 1898 B, p. 287.
Wortman, J. L. 1886 A, p. 469.
1893 B, p. 421.
Zittel, K. A. 1893 B, p. 203.

Suborder CONDYLARTHRA Cope.

Cope, E. D. 1881 X, p. 1017.
Ameghino, F. 1891 C, p. 214.
1896 A, p. 445.
Branco, W. 1897 A, p. 18.
Cope, E. D. 1882 A. (Taxeopoda, in part; Condylarthra.)
1882 E, p. 178.
1882 F.

Cope, E. D. 1882 R.
1882 Y. (Taxeopoda, in part; Condylarthra.)
1883 D. (Taxeopoda, in part; Condylarthra.)
1883 E.
1884 C. (Taxeopoda, in part.)
1884 O, pp. 378, 382 (Condylarthra); pp. 167, 374, 378 (Taxeopoda, in part).
1884 AA.
1885 K, p. 458.
1885 O.
1885 U.
1886 Q, p. 238. (Taxeopoda, in part.)
1887 I.
1887 N. (Taxeopoda, in part.)
1887 S, p. 342. (Taxeopoda, in part; Condylarthra.)
1888 Q. (Taxeopoda, in part.)
1888 T.
1888 CC.
1889 C. (Taxeopoda, in part; Condylarthra.)
1891 N, p. 79. (Taxeopoda, in part; Condylarthra.)
1892 S.
1898 B, p. 120 (Condylarthra); pp. 106, 120 (Taxeopoda, in part).
Earle, C. 1893 B.
1893 D.
Flower and Lydekker 1891 A, p. 438.
Gadow, H. 1898 A, p. 46.
Haeckel, E. 1895 A, pp. 529, 533.
Hay, O. P. 1899 F, p. 682.
Lydekker, R. 1885 E, p. 469. (Taxeopoda, in part.)
1886 A, p. 172.
Marsh, O. C. 1884 F, p. 171. (Protungulata.)
1892 D, p. 445. (Mesodactyla.)
Marsh, O. C. 1894 L, p. 26. (Mesodactyla.)
Matthew, W. D. 1897 B, pp. 261, 323 (Protungulata); p. 293 (Condylarthra).
Nicholson and Lydekker 1889 A, p. 1378
Osborn, H. F. 1888 F.
1890 D, p. 536.
1892 I.
1893 A, p. 383.
1893 D.
1898 H, p. 175.
Osborn and Earle 1895 A, p. 47.
Parsons, F. G. 1899 A.
1900 A.
Pavlow, M. 1887 A. (Taxeopoda, in part; Condylarthra.)
1888 A.
Röse, C. 1896 A, p. 84.
Roger, O. 1896 A, p. 163.
Rütimeyer, L. 1888 A. (Taxeopoda, in part; Condylarthra.)
1890 A. (Taxeopoda, in part; Condylarthra.)
1891 A.
Schlosser, M. 1884 B, p. 641.
1885 A, p. 683.
1886 B.
1887 A.
1888 A, p. 584.
1889 A.
1890 C.
1892 A.
Scott, W. B. 1892 A, p. 427.
Steinmann and Döderlein 1890 A, p. 749.
Tomes, C. S. 1898 A, p. 443.
Woodward, A. S. 1898 B, p. 289.
Wortman, J. L. 1883 A, p. 706. (Taxeopoda, in part.)
1885 A, p. 297. (Taxeopoda, in part.)
Zittel, K. A. 1893 B, pp. 213, 725.

PHENACODONTIDÆ.

Cope, E. D. 1881 X, p. 1018.
Ameghino, F. 1891 C, p. 215.
Cope, E. D. 1882 E, p. 178.
1882 F, pp. 95, 96.
1882 R.
1883 E.
1884 O, pp. 384, 386.
1884 AA, pp. 793, 892.
1887 N, p. 986.
Matthew, W. D. 1897 C, pp. 294, 299.
1899 A, pp. 28, 29, 32.
Nicholson and Lydekker 1889 A, p. 218.
Osborn and Earle 1895 A, p. 49.
Pavlow, M. 1887 A.
1888 A.
Roger, O. 1896 A, p. 165.
Rütimeyer, L. 1888 A, p. 44.
Schlosser, M. 1885 A, p. 683.
1886 B.
1888 A, p. 585.
1890 C.
Steinmann and Döderlein 1890 A, p. 750.
Wortman, J. L. 1882 B, p. 724.
Zittel, K. A. 1893 B, p. 218.

OXYACODON Osb. and Earle. Type *O. apiculatus* Osb. and Earle.

Osborn and Earle 1895 A, p. 25.
Matthew, W. D. 1897 C, p. 292.
1899 A, p. 28.
Trouessart, E. L. 1898 A, p. 72.
1899 A, p. 1290.

A genus of uncertain position; placed by Trouessart first in Primates, later in Carnivora; by Matthew in Creodonta *incertæ sedis*.

Oxyacodon agapetillus (Cope).

Cope, E. D. 1884 K, p. 320. (Anisonchus.)
1888 CC, p. 305. (Anisonchus.)
Matthew, W. D. 1897 C, pp. 264, 292, fig. 10.
Matthew, W. D. 1899 A, p. 28.
Roger, O. 1896 A, p. 165. (Anisonchus.)
Trouessart, E. L. 1899 A, p. 1290.

Eocene (Puerco); New Mexico.

Oxyacodon apiculatus Osb. and Earle.

Osborn and Earle 1895 A, p. 25, fig. 6.
Matthew, W. D. 1897 C, p. 292.
1899 A, p. 28.
Roger, O. 1896 A, p. 252.
Trouessart, E. L. 1898 A, p. 72.
1899 A, p. 1290.

Eocene (Puerco), New Mexico.

PROTOGONODON Scott. Type *Mioclænus pentacus* Cope.

Scott, W. B. 1892 B, p. 322.
Earle, C. 1893 B.
1893 D, p. 51.
Matthew, W. D. 1897 C. pp. 301, 302.
Osborn, H. F. 1894 A, p. 235.
Osborn and Earle 1895 A, pp. 64, 67.
Scott, W. B. 1892 A, p. 427.
Zittel, K. A. 1893 B, p. 586.

Protogonodon pentacus (Cope).

Cope, E. D. 1888 CC, p. 325. (Mioclænus.)
Earle, C. 1893 B.
Matthew, W. D. 1897 C, pp. 264, 302.
1899 A, p. 28.
Osborn and Earle 1895 A, p. 67, figs. 20, 21.
Roger, O. 1896 A, p. 166.
Scott, W. B. 1892 A, p. 427.
1892 B, p. 322.
Eocene (Puerco); New Mexico.

Protogonodon stenognathus Matth.

Matthew, W. D. 1897 C, pp. 264, 302.
1899 A, p. 28.
Eocene (Puerco); New Mexico.

TETRACLÆNODON Scott. Type *Mioclænus floverianus* Cope.

Scott, W. B. 1892 B, p. 299.
Cope, E. D. 1881 H, pp. 487, 492. (Protogonia, type *P. subquadrata*.)
1882 E, p. 178. (Protogonia.)
1882 F, p. 96. (Protogonia.)
1884 O, pp. 386, 424. (Protogonia.)
1884 AA, p. 893. (Protogonia.)
1887 I, p. 657. (Protogonia.)
1888 CC, p. 359. (Protogonia.)
1893, in Earle, C. 1893 B, p. 378. (Euprotogonia, to replace Protogonia preoccupied.)
1894 I, p. 594. (Euprotogonia.)
Earle, C. 1893 D, p. 50. (Euprotogonia.)
1898 A, p. 262. (Euprotogonia.)
Hay, O. P. 1899 A, p. 593.
Matthew, W. D. 1897 C. pp. 301, 303. (Euprotogonia.)
1899 A, p. 29.
Nicholson and Lydekker 1889 A, p. 1382. (Protogonia.)
Osborn, H. F. 1894 A, p. 235. (Euprotogonia.)
1898 A, p. 146. (Euprotogonia.)
1898 G, p. 163. (Euprotogonia.)
Osborn and Earle 1895 A, pp. 64, 66. (Euprotogonia.)
Pavlow, M. 1887 A. (Protogonia.)
Rütimeyer, L. 1888 A, p. 47. (Protogonia.)
Schlosser, M. 1894 A, p. 158. (Protogonia.)
Scott, W. B. 1892 A, p. 427 (Protogonia); p. 421 (Tetraclænodon).
1892 B, p. 299. (Tetraclænodon, type *Mioclænus floverianus* Cope.)
1892 D, p. 78. (Tetraclænodon.)
Steinmann and Döderlein 1890 A, p. 751. (Protogonia.)
Trouessart, E. L. 1898 A, p. 724. (Euprotogonia.)
Zittel, K. A. 1893 B, p. 218 (Protogonia); p. 588 (Tetraclænodon).

Tetraclænodon minor (Matth).

Matthew, W. D. 1897 C, pp. 264, 310. (Euprotogonia.)
Cope, E. D. 1888 CC, p. 305. (Protogonia zuniensis, in part.
Matthew, W. D. 1899 A, p. 29. (Euprotogonia.)
Eocene (Torrejon); New Mexico.

Tetraclænodon puercensis (Cope).

Cope, E. D. 1881 H. p. 492. (Phenacodus.)
1882 E, p. 180. (Syn. Phenacodus vortmani.)
1882 EE, p. 833. (Protogonia plicifera.)
1883 M, p. 561. (Phenacodus calceolatus.)
Cope, E. D. 1884 K, p. 309. (Protogonia plicifera.)
1884 O, pp. 433, 488, pl. xxv, figs. 12, 13; pl. lvii *f*, figs. 8, 9 (Phenacodus puercensis); pp. 433, 487, pl. xxiv *g*, fig. 7 (Phenacodus calceolatus); p. 424, pl. xxv *f*, figs. 2, 3 (Protogonia plicifera).
1884 AA, p. 893, fig. 14 (Protogonia plicifera); p. 900, fig. 22 (Phenacodus puercensis).
1885 J, p. 387. (Phenacodus.)
1887 I, p. 657. (Phenacodus puercensis.)
1888 CC, pp. 305, 359 (Phenacodus puercensis, P. plicifera, P. calceolata); p. 330 (Mioclænus floverianus).
Earle, C. 1893 D, p. 50. (Euprotogonia.)
Hay, O. P. 1899 A, p. 593. (Tetraclænodon.)
Matthew, W. D. 1897 C, pp. 264, 304, 320. (Euprotogonia.)
1899 A, p. 29.
Osborn, H. F. 1898 G, p. 163, fig. 4. (Euprotogonia.)
Osborn and Earle 1895 A, p. 65, fig. 19 (Euprotogonia puercensis); p. 65 (Euprotogonia plicifera).
Pavlow, M. 1887 A, figs. 1, 3. (Phenacodus.)
1888 A, p. 136. (Phenacodus.)
Roger, O. 1896 A, p. 32 (T. flowerianus); p. 165 (Euprotogonia calceolata, E. puercensis).
Schlosser M. 1896 B, p. 135, pl. vi, fig. 33 (Phenacodus puercensis); pl. v, fig. 30; pl. vi, fig. 32 (Protogonia plicifera).
Scott, W. B. 1892 B, p. 300. (Tetraclænodon floverianus.)
Trouessart, E. L. 1898 A, p. 724. (Euprotogonia.)
Wortman, J. L. 1896 A, p. 106, pl. ii, fig. A, text fig. 16 (Euprotogonia puercensis); pl. ii, fig. F, text fig. 17 (Euprotogonia plicifera).
Zittel, K. A. 1893 B, p. 218, fig. 158.
Eocene (Torrejon); New Mexico.

Tetraclænodon subquadratus Cope.

Cope, E. D. 1881 H, p. 492. (Protogonia.)
1884 O, p. 426, pl. lvii, figs. 11, 12. (Protogonia.)
1884 AA, p. 893. (Protogonia.)
1888 CC, p. 305. (Syn. of Protogonia puercensis.)
Matthew, W. D. 1897 C, p. 304. (Syn. of Euprotogonia puercensis.)
1899 A, p. 29. (Syn. of Euprotogonia puercensis.)
Osborn and Earle 1895 A, p. 64. (Euprotogonia.)
Pavlow, M. 1887 A, fig. 7. (Protogonia.)
Scott, W. B. 1892 A, p. 427, fig. 7. (Protogonia.)
Eocene (Torrejon); New Mexico.

PHENACODUS Cope. Type *P. primævus* Cope.

Cope, E. D. 1873 D, p. 3.
Baur, G. 1890 B.
Branco, W. 1897 A, p. 18.
Cope, E. D. 1875 C, p. 18.
1877 K, p. 173.
1881 H, p. 487.
1881 X.
1882 E, p. 177.
1882 F, p. 96.
1882 Y.
1883 B, p. 275.
1883 G.
1883 BB.
1884 O, pp. 386, 428.
1884 AA, p. 893 (Phenacodus); p. 900 (Trispondylus, type P. vortmani).
1885 K, p. 458.
1886 L.
1886 Q.
1888 T.
1889 C.
1889 J, p. 192.
1892 S, p. 411.
Earle, C. 1893 D.
Flower and Lydekker 1889 A, p. 439.
Leuthardt, F. 1891 A.
Lockwood, S. 1886 A, p. 325.
Lydekker R. 1886 D, p. 326.
1889 K.
Marsh, O. C. 1892 C, p. 352. (Syn. of Helohyus.)
Matthew, W. D. 1897 C, pp. 299, 301, 308.
Nicholson and Lydekker 1889 A, p. 1380.
Osborn, H. F. 1890 D, p. 532.
1893 D.
Owen, R. 1886 B.
Pavlow, M. 1887 A.
1888 A, p. 135.
1900 A, p. 46.
Roger, O. 1889 A.
Rütimeyer, L. 1888 A, p. 38.
Schlosser, M. 1885 A, p. 683.
1886 A, pp. 252, 432.
1886 B.
1894 A, p. 158.
Scott, W. B. 1892 A, p. 405.
Steinmann and Döderlein 1890 A, p. 751.
Tomes, C. S. 1898 A, p. 443.
Woodward, A. S. 1898 B, p. 290.
Woodward, H. 1886 B.
Wortman, J. L. 1882 B, p. 725.
1883 A, p. 708, fig. 125.
1886 A, p. 472.
Zittel, K. A. 1893 B, p. 219.

Phenacodus brachypternus Cope.

Cope, E. D. 1882 E, pp. 179, 180.
1884 O, pp. 433, 490, pl. xxv *e*, fig. 14.
1884 AA, p. 901, fig. 24.
Matthew, W. D. 1899 A, p. 32.
Roger, O. 1896 A, p. 166.
Trouessart, E. L. 1898 A, p. 725.
Eocene (Wasatch); Wyoming.

Phenacodus hemiconus Cope.

Cope, E. D. 1882 E, p. 179.
1884 O, pp. 433, 463, pl. xxv *e*, fig. 16.
Matthew, W. D. 1899 A, p. 32.
Roger, O. 1896 A, p. 166.
Trouessart, E. L. 1898 A, p. 725.
Eocene (Wasatch); Wyoming.

Phenacodus macropternus Cope.

Cope, E. D. 1882 E, pp. 179, 180.
1884 O, pp. 433, 490, pl. xxv *e*, fig. 15.
Matthew, W. D. 1899 A, p. 32.
Roger, O. 1896 A, p. 166.
Trouessart, E. L. 1898 A, p. 725.
Eocene (Wasatch); Wyoming.

Phenacodus nuniënus Cope.

Cope, E. D. 1884 O, pp. 433, 434, pl. lvii *h*, figs. 1, 2.
1884 AA, p. 898.
Matthew, W. D. 1897 C, p. 398, footnote.
1899 A, p. 32.
Roger, O. 1896 A, p. 166.
Trouessart, E. L. 1898 A, p. 725. (P. nunenius.)
Eocene (Wasatch); Wyoming.

Phenacodus omnivorus Cope.

Cope, E. D. 1874 O, p. 11.
1875 C, p. 18.
1877 K, p. 178, pl. xlv, fig. 6.
1882 E, p. 179.
1884 O, p. 463.
Matthew, W. D. 1899 A, p. 32. (Syn. of P. primævus.)
Eocene (Wasatch); New Mexico.

Phenacodus primævus Cope.

Cope, E. D. 1873 D, p. 3.
1874 B, p. 458.
1874 O, p. 10.
1875 C, p. 18.
1877 K, p. 174, pl. xlv, figs. 1-5.
1881 D, p. 200. (P. primævus; P. trilobatus.)
1882 E, p. 178.
1883 G, p. 563, pls. i, ii.
1883 BB, pl. xii.
1884 O, pp. 433, 435, pls. lvii *b*; lvii *c*; lvii *d*; lvii *e*; lvii *h*, figs. 1-16 (P. primævus); p. 463, pl. lviii, fig. 11 (P. trilobatus).
1884 AA, p. 893, figs. 15-19, pls. xxviii, xxix.
1887 I, p. 657.
1887 N, p. 987, fig. 1.
1887 S, p. 270, figs. 47, 48; p. 273, fig. 51; p. 275, pl. vii, figs. 3, 4.
1889 U.
King, C. 1878 A, p. 376.
Matthew, W. D. 1899 A, pp. 32, 36.
Osborn, H. F. 1897 B.
1898 G, pl, xii, text figs. 1-4.
1898 Q, p. 11.
Osborn and Wortman 1892 A, pp. 83, 86.
Pavlow, M. 1887 A.
Roger, O. 1896 A, p. 166. (P. primævus, P. trilobatus.)
Schlosser, M. 1886 B, p. 12. (P. trilobatus.)
Scott, W. B. 1892 A, p. 427, fig. 12.
Trouessart, E. L. 1898 A, p. 725.
Wortman, J. L. 1883 A, p. 708, fig. 127.
Zittel, K. A. 1893 B, p. 219, figs. 151, 153, 159, 160.
Eocene (Wasatch, Wind River); Wyoming, New Mexico.

Phenacodus sulcatus Cope.

Cope, E. D. 1874 O, p. 11.
1875 C, p. 18.
1877 K, p. 179, pl. xlv, fig. 7.
1882 E, p. 179.
Matthew, W. D. 1899 A, p. 32.
Roger, O. 1896 A, p. 166.
Eocene; New Mexico.

Phenacodus vortmani Cope.

Cope, E. D. 1880 N, p. 747. (Hyracotherium.)
1881 D, p. 199.
1882 E, p, 179, 180. (P. vortmani, P. apternus.)
1884 O, pp. 433, 464, pls. lvii *g*; lvii *h*, fig. 17; lviii, figs. 8–10.
Cope, E. D. 1884 AA, p. 899, text figs. 20, 21, pl. xxx; p. 900, footnote. ("Trispondylus.")
1887 I, p. 657. (P. wortmani.)
1889 U.
Matthew, W. D. 1899 A, pp. 32, 36.
Nicholson and Lydekker 1889 A, p. 1382.
Osborn and Wortman 1892 A, p. 86.
Pavlow, M. 1887 A.
Roger, O. 1896 A, p. 166. (P. vortmani, P. apternus.)
Schlosser, M. 1886 B, p. 12.
Scott, W. B. 1892 A, p. 427, fig. 7.
Trouessart, E. L. 1898 A, p. 725. (P. wortmanni.)
Zittel, K. A. 1893 B, p. 219. (P. wortmani.)
Eocene (Wasatch, Wind River); Wyoming.

ECTOCION Cope. Type *Oligotomus osbornianus* Cope.

Cope, E. D. 1882 X.
1884 O, pp. 694, 695.
1887 N, pp. 997, 1061.
Earle, C. 1892 C, p. 276. (Ectocium.)
Matthew, W. D. 1897 C, p. 301.
Wortman, J. L. 1883 A, p. 710. (Ectocium.)
1896 A, pp. 81, 83. (Ectocium.)
Zittel, K. A. 1893 B, p. 242. (Syn. of Eohippus.)

Ectocion osbornianum Cope.

Cope, E. D. 1882 E, p. 182. (Oligotomus.)
Cope, E. D. 1882 X.
1884 O, p. 696, pl. xxv *e*, figs. 9, 10.
1887 N, p. 1061, fig. 25.
Matthew, W. D. 1899 A, pp. 32, 36. (Phenacodus.)
Roger, O. 1896 A, p. 169. (Eohippus.)
Trouessart, E. L. 1898 A, p. 724.
Zittel, K. A. 1893 B, p. 242, fig. 177. (Eohippus.)
Eocene (Wasatch, Wind River); Wyoming.

MENISCOTHERIIDÆ.

Cope, E. D. 1882 R, p. 334.
Ameghino, F. 1897 A, p. 84.
Cope, E. D. 1882 F, p. 95.
1883 E.
1884 O, p. 384.
1884 AA, pp. 793, 901.
Matthew, W. D. 1897 C, p. 294.
Nicholson and Lydekker 1889 A, p. 1382.
Osborn, H. F. 1891 D, p. 911.
1892 C.
1893 F, p. 127.
Osborn and Earle, 1895 A, pp. 47, 49.
Roger, O. 1896 A, p. 167.
Pavlow, M. 1887 A.
Steinmann and Döderlein 1890 A, p. 751.
Zittel, K. A. 1893 B, p. 220.

MENISCOTHERIUM Cope. Type *M. chamense* Cope.

Cope, E. D. 1874 O, p. 8.
1877 K, p. 251.
1881 G, p. 396.
1882 F, p. 97.
1882 R, p. 334.
1884 O, pp. 386, 493.
1884 AA, p. 901.
1886 K, p. 721.
1887 I, p. 657.
1887 N, p. 1018.
1892 S, p. 412.
Lydekker, R. 1889 B.
Marsh, O. C. 1892 D, p. 445.
Matthew, W. D. 1897 C, p. 309.
Nicholson and Lydekker 1889 A, pp. 1376, 1382.
Osborn, H. F. 1890 D, p. 532.
1891 D, p. 911.
1892 C.
1892 G, figs. 1–4.
1893 D, p. 43.
1893 F, p. 127.
Osborn and Wortman 1893 A, p. 16.
Pavlow, M. 1887 A.
Schlosser, M. 1885 A, p. 683.
1886 B, p. 21.
Scott, W. B. 1892 A, p. 429.
Wortman, J. L. 1886 A, p. 475.
1896 B, p. 262.
Zittel, K. A. 1893 B, p. 221.

Meniscotherium chamense Cope.

Cope, E. D. 1874 O, p. 8.
1877 K, pp. 251, 252, pl. lxvi, fig. 18.
1884 AA, p. 904.
King, C. 1878 A, p. 376.
Marsh, O. C. 1892 D, p. 445.
Matthew, W. D. 1899 A, p. 32.
Roger, O. 1896 A, p. 167.
Trouessart, E. L. 1898 A, p. 726.
Eocene (Wasatch); New Mexico.

Meniscotherium tapiacitis Cope.

Cope, E. D. 1882 C, p. 470.
1884 O, p. 506, pl. xxv *f*, fig. 15.
1884 AA, p. 905, fig. 26 *b*.
Matthew, W. D. 1899 A, p. 32.

Roger, O. 1896 A, p. 167.
Eocene (Wasatch); New Mexico.

Meniscotherium terrærubræ Cope.

Cope, E. D. 1881 H, p. 493.
1882 C, p. 470.
1884 O, p. 496, pls. xxv *f*, figs. 12–14; pl. xxv *g*.
1884 AA, p. 904, figs. 25–28.
Matthew, W. D. 1899 A, p. 32.
Pavlow, M. 1887 A, figs. 12 *a*, 12 *b*.
Roger, O. 1896 A, p. 167.
Trouessart, E. L. 1898 A, p. 726.
Zittel, K. A. 1893 B, p. 221, fig. 163.
Eocene (Wasatch); New Mexico.

HYRACOPS Marsh. Type *H. socialis* Marsh.

Marsh, O. C. 1892 D, p. 446.
Cope, E. D. 1892 S, p. 412. (Syn.? of Meniscotherium.)
Matthew, W. D. 1899 A, p. 32, footnote.
Osborn, H. F. 1892 G, p. 506, figs. 1, 2. (Syn. of Meniscotherium.)
Zittel, K. A. 1893 B, p. 221.

Hyracops socialis Marsh.

Marsh, O. C. 1892 D, p. 447, figures.
Matthew, W. D. 1899 A, p. 32.
Osborn, H. F. 1892 G, p. 506, figs. 1–4. (Meniscotherium.)
1893 F, p. 128, figs. 1, 2. (Meniscotherium.)
Roger, O. 1896 A, p. 167.
Trouessart, E. L. 1898 A, p. 726.
Woodward, A. S. 1898 B, p. 289.
Zittel, K. A. 1893 B, p. 221, fig. 162.
Eocene (Wasatch); New Mexico.

MIOCLÆNIDÆ.

Osborn and Earle 1895 A, pp. 48, 61.
Matthew, W. D. 1897 C, p. 311.
Roger, O, 1896 A, p. 163.
Scott, W. B. 1892 B, p. 322. (Not named.)

MIOCLÆNUS Cope. Type *M. turgidus* Cope.

Cope, E. D. 1881 H, pp. 487, 490, 491.
1881 U, p. 830.
1882 E, p. 187.
1882 K, p. 71.
1884 K, p. 312.
1884 O, pp. 259, 324.
1884 S, p. 349.
1888 D.
1888 CC, p. 319.
Earle, C. 1893 B, p. 377.
Major, Fors. 1893 A, p. 199.
Matthew, W. D. 1897 C, p. 312.
Osborn, H. F. 1888 E.
1888 F, p. 1067.
Osborn and Earle 1895 A, p. 48.
Osborn and Wortman 1892 A, p. 118.
Pavlow, M. 1887 A.
Schlosser, M. 1887 B, p. 320.
Scott, W. B. 1892 A, p. 413.
1892 B, p. 321.
1892 D, p. 90.
Steinmann and Döderlein 1890 A, p. 712.
Trouessart, E. L. 1898 A, p. 719.
Zittel, K. A. 1893 B, pp. 585, 588, 589.

Mioclænus acolytus Cope.

Cope, E. D. 1882 C, p. 462. (Hyopsodus.)
1882 C, p. 468. (M. minimus.)
1884 K, pp. 309, 312. (M. minimus.)
1884 O, pp. 235, 238, pl. xxiii *d*, figs. 5, 6 (Hyopsodus); pp. 325, 327, pl. xxv *e*, figs. 22–24 (M. minimus).
1884 S, p. 349. (M. minimus.)
1888 CC, p. 335.
Matthew, W. D. 1897 C, p. 317, fig. 18.
1899 A, p. 29.
Roger, O. 1896 A, p. 164. (M. acolytus, M. minimus.)
Schlosser, M. 1887 B, p. 221. (M. minimus.)
Scott, W. B. 1892 B, p. 323.
Trouessart, E. L. 1898 A, p. 719.
Eocene (Torrejon); New Mexico.
For Matthew's disposition of *M. minimus* see *Ellipsodon inæquidens*.

Mioclænus lemuroides Matth.

Matthew, W. D. 1892 C, p. 315, figs. 15, 16.
Cope, E. D. 1888 CC, p. 334. (M. turgidunculus, in part.)
Matthew, W. D. 1899 A, p. 29.
Trouessart, E. L. 1898 A, p. 719.
Eocene (Torrejon); New Mexico.

Mioclænus lydekkerianus Cope.

Cope, E. D. 1888 CC, p. 328. (Type specimen only, *fide* Matthew.)
Matthew, W. D. 1897 C, pp. 264, 312, 313.
1899 A, p. 29.
Roger, O. 1896 A, p. 166. (Protogonodon.)
Scott, W. B. 1892 B, p. 322. (Protogonodon.)
Trouessart, E. L. 1898 A, p. 719.
Eocene (Torrejon); New Mexico.

Mioclænus turgidunculus Cope.

Cope, E. D. 1888 CC, p. 334. (In part, *fide* Matthew.)
1888 CC, p. 334.
Matthew, W. D. 1897 C, pp. 264, 313.
1899 A, p. 28.
Roger, O. 1896 A, p. 164. (Protogonodon.)
Scott, W. B. 1892 B, p. 322.
Trouessart, E. L. 1898 A, p. 719.
Eocene (Puerco); New Mexico.

Mioclænus turgidus Cope.

Cope, E. D. 1881 U, p. 830.
1881 H, p. 489.
1884 K, p. 312.
1884 O, p. 325, pl. xxv *e*, figs. 19, 20; pl. lvii *f*, figs. 3, 4.

Cope, E. D. 1884 S, p. 349, fig. 15.
1888 CC, p. 334. (M. zittelianus.)
Earle, C. 1893 B, p. 379.
Matthew, W. D. 1897 C, pp. 264, 312.
1899 A, p. 29.
Osborn and Earle 1895 A, p. 50, fig. 17.
Pavlow, M. 1887 A, fig. 8.
Roger, O. 1896 A, p. 163 (M. turgidus); p. 164 (M. zittelianus).
Schlosser, M. 1887 B, p. 221.
Scott, W. B. 1892 B, p. 321. (M. turgidus, M. zittelianus.)
Trouessart, E. L. 1898 A, p. 719.
Eocene (Torrejon); New Mexico.

PROTOSELENE Matth. Type *Mioclænus opisthacus* Cope.

Matthew, W. D. 1897 C, p. 317.

Protoselene opisthaca (Cope).

Cope, E. D. 1882 EE, p. 833. (Mioclænus.)
1882 C, p. 467. (Hemithlæus.)
1882 EE, p. 853. (Mioclænus baldwini.)
1884 K, p. 312. (Mioclænus opisthacus, M. baldwini.)
1884 O, p. 407, pl. xxv*f*, figs. 8, 9 (Hemithlæus); pp. 325, 328, pl. xxv*f*, fig. 16 (Mioclænus baldwini).
Cope, E. D. 1888 CC, p. 332. (Mioclænus.)
Matthew, W. D. 1897 C, pp. 264, 317, figs. 19, 20.
1899 A, p. 29.
Roger, O. 1896 A, p. 164. (Mioclænus.)
Schlosser, M, 1887 B, p. 221. (Mioclænus baldwini.)
Trouessart, E. L. 1898 A, p. 720.
Eocene (Torrejon); New Mexico.

Suborder PERISSODACTYLA Owen.

Owen, R. 1848 A, p. 131.
Branco, W. 1897 A, p. 18.
Burmeister, H. 1867 A, p. 237. (Imparidigitata.)
Cope, E. D. 1873 E, p. 562.
1873 F, p. 39.
1874 M.
1880 B, p. 457.
1881 G.
1881 I, p. 269.
1881 J.
1882 A.
1882 E, p. 177.
1882 Y.
1883 D. (Diplarthra, part.)
1884 O, pp. 379, 614 (Perissodactyla); pp. 167, 378, 613 (Diplarthra, part).
1886 C, p. 615. (Diplarthra, part.)
1887 N.
1887 S.
1888 K, p. 163. (Diplarthra, part.)
1889 C, p. 148, *et seq.*
1889 R, p. 877.
1891 N, p. 84. (Diplarthra, part.)
1892 S.
1898 B, p. 125. (Diplarthra, part.)
Cope and Wortman 1884 A, p. 15.
Flower, W. H. 1876 B, xiii, p. 327.
1883 A.
1883 D, p. 427.
1885 A.
Flower and Lydekker 1891 A, p. 368.
Gadow, H. 1898 A, p. 46.
Gegenbaur, C. 1898 A.
Gill, T. 1872 A, p. 299.
1872 B, pp. 11, 71, 84.
Gruber, W. 1859 A.
Haeckel, E. 1895 A, p. 543.
Hay, O. P. 1899 F, p. 682.
Huxley, T. H. 1870 A, p. 440.
1872 A, p. 293.
Leidy, J. 1871 C, p. 356.
Leuthardt, F. 1891 A. (Mesaxonia.)
Lydekker, R. 1885 E, p. 469. (Diplarthra, part.)
1886 A, p. 1.
Lydekker, R. 1891 B.
1896 B.
Marsh, O. C. 1884 F, p. 177. (Clinodactyla, Mesaxonia.)
1892 C, p. 349. (Mesaxonia.)
Nicholson and Lydekker 1889 A, p. 1382.
Osborn, H. F. 1890 D, pp. 505, 541, 559.
1893 A, p. 379.
1893 D.
1898 I, p. 79.
1900 C, p. 568.
Osborn and Wortman 1892 A.
Owen, R. 1845 B, p. 572. ("Isodactyle Ungulata.")
1857 A.
1866 B, p. 444.
1868 A, p. 352.
Paulli, S. 1900 A, p. 181.
Pavlow, M. 1887 A.
Roger, O, 1896 A, p. 168.
Röse, C. 1896 A.
Rütimeyer, L. 1865 A. (Imparidigitata.)
1888 A. (Diplarthra, part.)
Schlosser, M. 1885 A.
1886 A, p. 252.
1886 B.
1887 A.
1888 A.
1889 A.
1890 C.
1890 D.
1892 A.
Schmidt, O. 1886 A, p. 189.
Scott, W. B. 1892 A, p. 430.
Steinmann and Döderlein 1890 A, p. 765.
Tornier, G. 1888 A, p. 299.
Turner, H. N. 1848 A.
Weber, M. 1886 A, p. 226.
Wiedersheim, R. 1881 A, p. 360. (Perissodactyli.)
Woodward, A. S. 1898 B, p. 319.
Wortman, J. L. 1883 A, p. 706.
1885 A, p. 297. (Diplarthra, part.)
1898 B, p. 208. (Diplarthra, part.)
Zittel, K. A. 1893 B, pp. 224, 726.

Superfamily EQUOIDEA.

Gill, T. 1872 B, p. 87. (Solidungula.)
Osborn, H. F. 1898 I, p. 79. (Hippoidea.)

EQUIDÆ.

Ameghino, F. 1889 A, p. 502.
1891 A.
Boule, M. 1899 A, p. 531. ("Équidés.")
Branco, W. 1897 A, p. 18.
Cope, E. D. 1874 M.
1881 G, pp. 378, 380, 400.
1881 O. (Equidæ, Anchitheriidæ.)
1884 O, pp. 615, 715, 716.
1887 N.
1889 C.
1892 S.
1893 A.
Cope and Wortman 1884 A, p. 26.
Cornevin, C. 1882 A.
Cuvier, G. 1834 A, iii, pp. 193–220, with plates.
Ewart, J. C. 1894 A.
1894 B.
Farr, M. S. 1896 A.
Flower, W. H. 1876 B, xiii, p. 308.
1876 C, p. 109.
Flower and Lydekker 1891 A, p. 376.
Gadow, H. 1898 A, p. 47.
George, ——. 1869 A.
Gervais, P. 1874 A.
Gray, J. E. 1869 A, p. 262.
Haeckel, E. 1895 A, p. 547. (Hippotherida.)
Huxley, T. H. 1870 A, p. 439.
1870 B, p. xlix.
1872 A, p. 295.
1876 B, xiv, p. 34.
1880 B, p. 649.
Klever, E. 1889 A.
Kowalevsky, W. 1873 B.
Leidy, J. 1869 A, p. 302. (>Anchitheriidæ.)
1871 C, p. 359. (Equidae, Anchitheriidæ.)
Lydekker, R. 1882 A.
1886 A, p. 49.
1886 D, p. 326.
1891 B.
Major, F. 1873 A, p. 109.
Major, F. 1877 A.
1880 A.
Marsh, O. C. 1877 E.
1892 C, p. 339.
Matthew, W. D. 1899 A, p. 22, *et seq.*
Nicholson and Lydekker 1889 A, p. 1359.
Osborn, H. F. 1893 D, p. 37.
1898 I, p. 79.
Osborn and Wortman 1892 A, p. 123.
Owen, R. 1845 B, p. 572.
1870 B.
1878 C, p. 218.
Pavlow, M. 1888 A, p. 134.
1890 A.
Ridewood, W. G. 1895 A.
Roger, O. 1889 A.
1896 A, p. 168.
Rütimeyer, L. 1862 A.
1875 A.
1888 A, p. 16.
Ryder, J. 1877 A.
Schlosser, M. 1886 A. (Hippidæ.)
1886 B.
Schmidt, O. 1886 A, p. 201.
Scott, W. B. 1886 B.
1891 B.
1895 C, p. 78.
Slade, D. D. 1893 A.
Steinmann and Döderlein 1890 A, p. 778.
Tornier, G. 1888 A, p. 301.
Trouessart, E.-L. 1898 A, p. 783.
Tscherski, J. D. 1892 A, p. 257.
Weyhe, ——. 1875 A, p. 121.
Wilckens, M. 1884 A.
1884 B.
1885 A.
1888 A.
Woodward, A. S. 1898 B, p. 337.
Wortman, J. L. 1882 B.
Zittel, K. A. 1893 B, pp. 231, 259.

HYRACOTHERIINÆ.

Branco, W. 1897 A, p. 18.
Cope, E. D. 1881 G, p. 381.
1884 O, p. 618.
1886 K. (Hyracotheriidæ.)
1887 N, p. 994.
1889 C, p. 162 *et seq.*
Haeckel, E. 1895 A, p. 518. (Hyracotherida.)
Marsh, O. C. 1892 C, p. 352. (>Orohippidæ.)
Osborn, H. F. 1893 D, p. 37. (Systemodontinæ, in part.)
Osborn and Wortman 1892 A, p. 98.
Roger, O. 1896 A, p. 168.
Rütimeyer, L. 1888 A, p. 27.
Steinmann and Döderlein 1890 A, p. 769. (Hyracotheriidæ.)
Wortman, J. L. 1896 A.
Wortman and Earle 1893 A. (Systemodontinæ, in part.)
Zittel, K. A. 1893 B, p. 239.

EOHIPPUS Marsh. Type *E. validus* Marsh.

Marsh, O. C. 1876 H, p. 401.

Since many writers regard Marsh's genus *Eohippus* as a synonym, or at most a subgenus of *Hyracotherium* Owen, and refer to the American species under the latter name, the literature of both genera is included in the following citations. Unless otherwise indicated the authors in this list employ the term *Hyracotherium.*

Ameghino, F, 1896 A, p. 410.
Cope, E. D. 1877 K, p. 258.
1881 G, p. 381.
1881 Y. (Systemodon, type *Hyracotherium tapirinum.*)
1883 B, p. 275.
1884 O, pp. 618, 624. (Hyracotherium, Systemodon.)
1886 K. (Hyracotherium, Systemodon.)

Cope, E. D. 1887 I.
1887 N, p. 994 (Hyracotherium, Systemodon.
1889 C.
1892 S, p. 411.
Earle, C. 1893 C p. 393. (Hyracotherium, Systemodon.)
1896 A.
Flower and Lydekker 1891 A, pp. 373, 374. (Hyracotherium, Systemodon.)
Kowalevsky, W. 1873 A, p. 205.
Landois, — 1881 A, p. 127.
Leuthardt, F. 1891 A. (Hyracotherium.)
Lydekker, R. 1886 A, p. 10.
1886 D, p. 326.
Marsh, O. C. 1877 E, p. 358.
1879 D, p. 504.
1892 C, p. 351. (Eohippus, Hyracotherium.)
1898 E, p. 568.
Matthew, W. D. 1897 C, p. 309.
1899 A, p. 33.
Nicholson and Lydekker 1889 A, pp. 1356, 1380. (Hyracotherium, Systemodon.)
Owen, R. 1844 A, p. 226.
1857 C, p. 65.
Osborn, H. F. 1890 A.
1890 B, p. 274.
1890 D, p. 505.
1893 D.
Osborn and Wortman 1892 A, pp. 83, 93 (Hyracotherium); p. 124 (Systemodon).
Pavlow, M. 1887 A, p. 350.
1888 A. (Eohippus, Systemodon,)
1900 A, p. 46.
Rütimeyer, L. 1862 A, p. 577.
1891 A, p. 45.
Schlosser, M. 1886 A, pp. 252, 432. (Hyracotherium, Systemodon.)
1886 B. (Hyracotherium, Eohippus, Systemodon.)
1887 A.
Scott, W. B. 1886 B.
1892 A, p. 430. (Systemodon.)
Steinmann and Döderlein 1890 A, p. 770.
Tomes, C. S. 1898 A, p. 412. (Hyracotherium.)
Trouessart, E. L. 1898 A, p. 770 (Hyracotherium); p. 771 (Eohippus, subgenus); p. 772 (Pliolophus, subgenus).
Wilckens, M. 1885 B, p. 210.
Woodward, A. S. 1898 B, p. 323.
Wortman, J. L. 1882 B, vi, p. 68.
1883 A, p. 709.
1886 A, p. 477. (Hyracotherium, Eohippus.)
1893 B.
1896 A. (Hyracotherium, Systemodon.)
Wortman and Earle, 1893 A. (Hyracotherium, Systemodon.)
Zittel, K. A. 1893 B, p. 239 (Hyracotherium); p. 277 (Systemodon).

Eohippus craspedotus (Cope).

Cope, E. D. 1880 N, p. 747. (Hyracotherium.)
1881 D, p. 199. (Hyracotherium.)
1882 E, p. 186. (Hyracotherium.)
1884 O, p. 631, pl. lviii, figs. 1, 2. (Hyracotherium.)
1887 I, p. 656. (Hyracotherium.)
Matthew, W. D. 1899 A, p. 36. (Hyracotherium.)
Roger, O. 1896 A, p. 169. (Hyracotherium.)
Trouessart, E. L. 1898 A, p. 771. [Hyracotherium (Eohippus).]
Wortman, J. L. 1896 A, p. 97, pl. ii, fig. M, text fig. 7. (Hyracotherium.)
Eocene (Wind River); Wyoming.

Eohippus cristatus (Wort.).

Wortman, J. L. 1896 A, p. 96, pl. ii, fig. H; text fig. 6. (Hyracotherium.)
Matthew, W. D. 1899 A, p. 33. (Hyracotherium.)
Trouessart, E. L. 1898 A, p. 771. [Hyracotherium (Eohippus).]
Eocene (Wasatch); Wyoming.

Eohippus index (Cope).

Cope, E. D. 1873 D, p. 4. (Orotherium.)
Allen, H. 1886 B. (Hyracotherium cuspidatum, Pliolophus vintanus.)
Cope, E. D. 1873 U, p. 3. (Orotherium vasacciense.)
1874 B, p. 459. (Orotherium.)
1875 C, p. 20 (Orohippus index); p. 18 (Orotherium vintanum); pp. 20, 21 (Orohippus angustidens); p. 22 (O. cuspidatus).
1877 K, p. 262 (Orohippus index); p. 255, pl. lxv, figs. 1–12 (Orotherium vintanum); pp. 262, 265, pl. lxvi, figs. 1–6 (Hyracotherium angustidens); pp. 262, 267, pl. lxv, fig. 18 (Hyracotherium cuspidatum); p. 264, pl. lxvi, figs. 7–11 (Hyracotherium vasacciense).
1880 N, p. 747. (Hyracotherium angustidens, H. vasacciense.)
1881 D, p. 198. (Hyracotherium angustidens.)
1882 E, p. 186 (Hyracotherium angustidens, H. vasacciense, H. venticolum); pp. 179, 181, pl. xxv *e*, fig. 17, premolars (Phenacodus laticuneus).
1884 O, pp. 630, 650 (Hyracotherium index); pp. 630, 648, pl. xlix *a*, fig. 16 (Hyracotherium angustidens); p. 631 (Hyracotherium cuspidatum); pp. 630, 634 (Hyracotherium vasacciense, in part).
King, C. 1878 A, p. 377. (Eohippus angustidens, E. cuspidatus.)
Lydekker, R. 1886 A, p. 12, fig. 3. (Hyracotherium angustidens.)
Matthew, W. D. 1899 A, p. 30, footnote; p. 33. (Hyracotherium).
Pavlow, M. 1888 A, pl. i, fig. 10. (Hyracotherium angustidens.)
Roger, O. 1896 A, p. 169 (Hyracotherium angustidens); p. 171 (Epihippus cuspidatus).
Trouessart, E. L. 1898 A, p. 771 [Hyracotherium (Eohippus)]; p. 776 (Epihippus).
Wortman, J. L. 1896 A, p. 99, pl. ii, fig. L; text figs. 9, 10. (Hyracotherium.)
Eocene (Wasatch); New Mexico, Wyoming.

Eohippus pernix Marsh.

Marsh, O. C. 1876 H, p. 402.
King, C. 1878 A, p. 377.
Marsh, O. C. 1892 C, p. 349, figs. 14, 15.
Matthew, W. D. 1899 A, p. 33. (Syn. of Hyracotherium index.)

Pavlow, M. 1888 A, p. 145.
Roger, O. 1896 A, p. 169.
Trouessart, E. L. 1898 A, p. 772. [Hyracotherium (Eohippus).]
Wortman, J. L. 1896 A, p. 82. (Syn.? of Hyracotherium index.)
Eocene (Wasatch); Wyoming.

Eohippus tapirinus (Cope).

Cope, E. D. 1875 C, p. 20. (Orohippus.)
1877 K, p. 263, pl. lxvi, figs. 12–16. (Hyracotherium.)
1881 Y. (Systemodon.)
1882 E, p. 183. (Systemodon.)
1884 O, p. 619, pl. lvi, figs. 1, 2. (Systemodon.)
1887 N, p. 999, fig. 8. (Systemodon.)
Hay, O. P. 1899 A, p. 593. (Hyracotherium.)
King, C. 1878 A, p. 377.
Matthew, W. D. 1899 A, p. 33. (Hyracotherium.)
Osborn and Wortman 1892 A, p. 125, fig. 17, only part, if any. (Systemodon.)
Pavlow, M. 1888 A, p. 174. (Systemodon.)
Roger, O. 1896 A, p. 183. (Systemodon.)
Scott, W. B. 1892 A, p. 430. (Systemodon.)
Trouessart, E. L. 1898 A, p. 771. [Hyracotherium (Eohippus).]
Woodward, A. S. 1898 B, p. 323, fig. 183.
Wortman, J. L. 1896 A, p. 94, pl. ii, fig. K, text figs. 4, 5. (Hyracotherium.)
Wortman and Earle 1893 A, p. 170. (Systemodon.)
Eocene (Wasatch); Wyoming, New Mexico.

Eohippus validus Marsh.

Marsh, O. C. 1876 H, p. 401.
King, C. 1878 A, p. 377.
Matthew, W. D. 1899 A, p. 33. (Syn. of E. vasacciensis.)
Roger, O. 1896 A, p. 169.
Trouessart, E. L. 1898 A, p. 772. [Hyracotherium (Eohippus).]
Wortman, J. L. 1896 A, p. 82. (Syn.? of Hyracotherium vasacciense.)
Eocene (Wasatch); New Mexico.

Eohippus vasacciensis (Cope).

Cope, E. D. 1872 O, p. 474. (Notharctus.)
1872 E, p. 471. (Notharctus vasachiensis.)
1873 E, pp. 606, 646. (Orotherium.)
1873 U, p. 3. (Orotherium.)
1875 C, p. 21. (Orohippus.)
1884 O, p. 634. (Hyracotherium.)
King, C. 1878 A, p. 376. (Orohippus.)
Matthew, W. D. 1899 A, p. 33. (Hyracotherium.)
Roger, O. 1896 A, p. 169.
Trouessart, E. L. 1898 A, p. 771. [Hyracotherium (Eohippus).]
Wortman, J. L. 1896 A, p. 98, pl. ii, fig. G; text fig. 8. (Hyracotherium.)
Eocene (Wasatch); Wyoming.

PLIOLOPHUS Owen. Type *P. vulpiceps* Owen.

Owen, R. 1857 C, p. 54, pls. ii–iv.
Cope, E. D. 1881 G, p. 381.
1884 O, pp. 618, 650.
1887 N, pp. 994, 997.
1892 S, p. 411.
Earle, C. 1896 A.
Owen, R. 1860 E, p. 326.
Wortman, J. L. 1896 A, pp. 83, 102.
Zittel, K. A. 1893 B, pp. 239, 243. (Syn. of Hyracotherium.)

It is doubtful whether the American species belong to this genus or to *Eohippus;* indeed, the genus itself is of doubtful validity.

Pliolophus cristonensis Cope.

Cope, E. D. 1877 K, p. 254, pl lxv, figs. 13, 14. (Orotherium.)
1875 C, pp. 20, 21. (Orohippus major, not of Marsh.)
1877 K, p. 257, pl. lxv, figs. 15–17. (Orotherium lœvii.)
Cope, E, D. 1884 O, p. 651. (P. cristonensis, P. lœvii.)
Matthew, W. D. 1899 A, p. 33. (Hyracotherium.)
Roger, O. 1896 A, p. 170. (Pachynolophus.)
Trouessart, E. L. 1898 A, p. 772. [Hyracotherium (Pliolophus).]
Wortman, J. L. 1896 A, p. 102, pl. ii, figs. i, i′, text figs. 11, 12. [Hyracotherium (Pliolophus).]
Zittel, K. A. 1893 B, p. 243, fig. 180. (Pachynolophus.)
Eocene (Wasatch); New Mexico, Wyoming.

Pliolophus montanus Wort.

Wortman, J. L. 1896 A, p. 103, pl. ii, fig. J; text fig. 13. [Hyracotherium (Pliolophus).]
Matthew, W. D. 1899 A, p. 33.
Trouessart, E. L. 1898 A, p. 772. [Hyracotherium (Pliolophus).]
Eocene (Wasatch); Wyoming.

PROTOROHIPPUS Wortman. Type *Hyracotherium venticolum* Cope.

Wortman, J. L. 1896 A, pp. 91, 104.
Osborn, H. F. 1897 G. p. 258.

Protorohippus venticolus (Cope).

Cope, E. D. 1881 D, p. 198. (Hyracotherium.)

Unless otherwise indicated, the following authors refer this species to *Hyracotherium.*

Cope, E. D. 1884 O, pp. 630, 635, pl. xlix *a*, figs. 1–15; pls. xlix *b*, xlix *c*.
Cope, E. D. 1887 N, p. 995, pl. xxx, text figs. 5–7.
1887 S, p. 270, pl. vi, figs. 1, 2.
1888 T.
1889 C, p. 159.
Matthew, W. D. 1899 A, p. 36. (Protorohippus.)
Osborn H. F. 1896 C, p. 708, illus. 4.
1898 Q, pp. 10, 15.
Pavlow, M. 1887 A.
1888 A, p. 114, pl. i, figs. 1, 9.

Roger, O. 1896 A, p. 168.
Rütimeyer, L. 1888 A, p. 15.
Schlosser, M. 1886 B, pl. v, fig. 32; pl. vi, fig. 34. (Hyracotherium.)
Woodward, A. S. 1898 B, p. 324, fig. 184. (Hyracotherium.)
Wortman, J. L. 1883 A, p. 709, figs. 128–130.
1896 A, p. 105, pl. ii, fig. N; text figs. 14. 15. (Protorohippus.)
Zittel, K. A. 1893 B, p. 240, figs. 174, 175.
Eocene (Wind River); Wyoming, Colorado.

HELOHIPPUS Marsh. Type *Lophiodon pumilus* Marsh.

Marsh, O. C. 1892 C, p. 353.

Helohippus pumilus Marsh.

Marsh, O. C. 1871 D, p. 38. (Lophiodon.)
Leidy, J. 1872 B, p. 362. (Lophiodon.)
Leidy, J. 1872 C, p. 20. (Lophiodon.)
Marsh, O. C. 1892 C, p. 353.
Matthew, W. D. 1899 A, p. 45.
Roger, O. 1896 A, p. 169.
Eocene (Bridger); Wyoming.

OROHIPPUS Marsh. Type *O. pumilis* Marsh.

Marsh, O. C. 1872 I, p. 207.
Cope, E. D. 1872 N, p. 466. (Helotherium, type *H. procyoninus.*)
1873 E, p. 606 (Orohippus); p. 607 (Oligotomus).
1873 U, p. 2. (Oligotomus, type *O. cinctus.*)
1874 M. (Syn. of Hipposyus.)
1875 C, pp. 13, 18, 20 (Orotherium); p. 19 (Orohippus).
1877 K, p. 258 (Syn. of Hyracotherium); p. 252 (Orotherium).
1887 N, pp. 997, 1074. (Syn. of Pliolophus.)
1892 S, p. 411.
Dana, J. D. 1896 A, p. 913, fig. 1540.
Farr, M. S. 1896 A, p. 157. (Syn. of Pachynolophus.)
Flower, W. H. 1876 B, xiii, p. 327.
Flower and Lydekker 1891 A, p. 374. (Syn. of Pachynolophus.)
Gaudry, A. 1878 B, p. 142.
Huxley, T. H. 1876 B, xiv, p. 34.
1876 C, p. 294.
Landois, — 1881 A, p. 128.
Leidy, J. 1871 C, p. 358. (Lophiotherium.)
1873 B, p. 69. (Lophiotherium.)
Lydekker, R. 1886 A, p. 10. (Syn. of Hyracotherium.)
Marsh, O. C. 1872 I, p. 217. (Orotherium, type *O. uintanum.*)
1873 H, p. 407.
1874 B, p. 247.
1874 D, p. 66.
1876 G.
1877 E.
1879 D, p. 504.
1892 C, p. 348.
1898 E, p. 568.
Nicholson and Lydekker 1889 A, p. 1356.
Osborn, H. F. 1890 D, p. 506. (Syn. of Pliolophus.)
Osborn, Scott, and Speir 1878 A, p. 17 (Oligotomus); p. 24 (Orohippus).
Schlosser, M. 1886 B, p. 13. (Orotherium.)
Scott, W. B. 1891 B, p. 302.
Tomes, C. S. 1898 A. p. 415.
Weithofer, A. 1888 A, p. 278.
Wortman, J. L. 1883 A, p. 709. (Syn. of Hyracotherium.)
1896 A, pp. 92, 93, 108, fig. 18; pl. ii, fig. E.
Zittel, K. A. 1893 B, p. 242. (Syn. of Pachynolophus.)

Orohippus agilis Marsh.

Marsh, O. C. 1873 H, p. 407.
Cope, E. D. 1875 C, p. 22.
1877 K, p. 267. (Hyracotherium.)
Gaudry, A. 1878 B, p. 143.
King, C. 1878 A, p. 404.
Marsh, O. C. 1874 B, pp. 248, 255, figure.
1892 C, p. 349, figs. 16, 17.
Matthew, W. D. 1899 A, p. 45.
Osborn, H. F. 1890 D, p. 506. (Epihippus.)
Roger, O. 1896 A, p. 171. (Epihippus.)
Trouessart, E. L. 1898 A, p. 777. (Epihippus.)
Eocene (Bridger); Wyoming: Eocene (Uinta); New Mexico.

Orohippus ballardi (Marsh).

Marsh, O. C. 1871 D, p. 39. (Lophiotherium.)
Leidy, J. 1872 B, p. 365. (Lophiotherium.)
Marsh, O. C. 1872 I, p. 217. (Lophiotherium.)
Roger, O. 1896 A, p. 170. (Pachynolophus.)
Eocene (Bridger); Wyoming.

Orohippus cinctus (Cope).

Cope, E. D. 1873 U, p. 2. (Oligotomus.)
1873 E, p. 607. (Oligotomus.)
1884 O, p. 653, pl. xxiv, fig. 26. (Pliolophus.)
Matthew, W. D. 1899 A, p. 45. (Oligotomus.)
Osborn, Scott, and Speir 1878 A, p. 17. (Oligotomus.)
Roger, O. 1896 A, p. 170. (Pachynolophus.)
Trouessart, E. L. 1898 A, p. 774.
Wortman, J. L. 1896 A, p. 108.
Eocene (Bridger); Wyoming.

Orohippus major Marsh.

Marsh, O. C. 1874 B, p. 248.
Matthew, W. D. 1899 A, p. 45.
Osborn, H. F. 1890 D, p. 544, figures. (Pliolophus.)
Osborn, Scott, and Speir 1878 A, p. 24, pl. ix, figs. 1-7. (Identification doubtful.)
Trouessart, E. L. 1898 A, p. 772.
Eocene (Bridger); Wyoming.

Orohippus osbornianus (Cope).

Cope, E. D. 1884 O, pp. 630, 647, pl. xxiv, fig. 23. (Hyracotherium.)
1873 E, p. 607. (Orotherium sylvaticum, not Lophiotherium sylvaticum of Leidy.)

Cope, E. D. 1873 U, p. 2. (Orotherium sylvaticum.)
1877 K, p. 262. (Hyracotherium sylvaticum.)
Matthew, W. D. 1899 A, p. 45. (Hyracotherium.)
Roger, O. 1896 A, p. 169. (Hyracotherium.)
Trouessart, E. L. 1898 A, p. 774.
Eocene (Bridger); Wyoming.

Orohippus procyoninus Cope.

Cope, E. D. 1872 N, p. 466. (Helotherium.)
1873 E, p. 606.
1875 C, pp. 20, 22.
1877 K, pp. 262, 266. (Hyracotherium.)
1884 O, pp. 631, 711, pl. xxiv, fig. 22. (Lambdotherium.)
1887 S, p. 45. (Lambdotherium.)
Marsh, O. C. 1873 K, p. 249. (Syn.? of O. pumilis.)
Matthew, W. D. 1899 A, p. 45. (Hyracotherium.)
Roger, O. 1896 A, p. 193. (Lambdotherium.)
Eocene (Bridger); Wyoming.

Orohippus pumilis Marsh.

Marsh, O. C. 1872 I, p. 207.
Cope, E. D. 1873 E, p. 606. (Syn. of O. procyoninus.)
1875 C, p. 22. (Syn. of O. procyoninus.)
1877 K, p. 266. (Syn.? of Hyracotherium procyoninum.)
Marsh, O. C. 1874 B, p. 249.
Matthew, W. D. 1899 A, p. 45.
Osborn, Scott, and Speir 1878 A, p. 24.
Roger, O. 1896 A, p. 170. (Pachynolophus.)
Trouessart, E. L. 1898 A, p. 773.
Eocene (Bridger); Wyoming.

Orohippus sylvaticus (Leidy).

Leidy, J. 1870 T, p. 126. (Lophiotherium.)
Cope, E. D. 1884 O, pp. 631, 647, 652. (Pliolophus.)
Leidy, J. 1871 C, p. 358. (Lophiotherium.)
1872 B, p. 364. (Lophiotherium.)
1873 B, pp. 69, 327, pl. vi, figs. 33-35. (Lophiotherium.)
Matthew, W. D. 1899 A, p. 45.
Roger, O. 1896 A, p. 170. (Pachynolophus.)
Trouessart, E. L. 1898 A, p. 773.
Eocene (Bridger); Wyoming.

Orohippus uintanus (Marsh).

Marsh, O. C. 1872 I, p. 217. (Orotherium.)
Cope, E. D. 1881 D, p. 199. (Orotherium.)
1884 O, p. 651. (Pliolophus vintanus.)
Matthew, W. D. 1899 A, p. 45.
Roger, O. 1896 A, p. 170. (Pachynolophus.)
Trouessart, E. L. 1898 A, p. 777, in part. (Epihippus uintensis.)
Eocene (Bridger); Wyoming.

EPIHIPPUS Marsh. Type *E. gracilis* Marsh.

Marsh, O. C., 1878, Pop. Sci. Month., p. 678.
Cope, E. D. 1887 N, pp. 1061, 1063.
1890 C, p. 470.
1892 S, p. 411.
Flower and Lydekker 1891 A, p. 374.
Marsh, O. C. 1879 D, p. 504. (No definition.)
1892 C, p. 353.
1898 E, p. 568.
Matthew, W. D. 1899 A, p. 49.
Nicholson and Lydekker 1891 A, p. 1358.
Osborn, H. F. 1890 D, pp. 506, 529.
Schlosser, M. 1886 B, p. 14.
Steinmann and Döderlein 1890 A, p. 780.
Wortman, J. L. 1896 A, p. 92.
Zittel, K. A. 1893 B, p. 244.

Epihippus gracilis Marsh.

Marsh, O. C. 1871 D, p. 38. (Anchitherium.)
1878, in King, C. 1878 A, p. 407.
1874 B, p. 249. (Orohippus.)
Matthew, W. D. 1899 A, p. 49.
Roger, O. 1896 A, p. 171 (Epihippus); p. 174 (Mesohippus?).
Scott and Osborn 1887 A, p. 259.
Trouessart, E. L. 1898 A, p. 777 (Epihippus); p. 781 (Mesohippus).
Eocene (Uinta); Utah.

Epihippus uintensis Marsh.

Marsh, O. C. 1875 B, p. 247. (Orohippus.)
1878, in King, C. 1878 A, p. 407.
Matthew, W. D. 1899 A, p. 49.
Osborn, H. F. 1890 D, p. 529, pl. xi, figs. 3, 5.
1895 A, p. 98.
Roger, O. 1896 A, p. 171.
Scott and Osborn 1887 A, p. 259.
Trouessart, E. L. 1898 A, p. 777, in part.
Zittel, K. A. 1893 B, p. 245, fig. 184.
Eocene (Uinta); Utah.

MIOHIPPUS Marsh. Type *M. annectens* Marsh.

Marsh, O. C. 1874 B, p. 249.
Ameghino, F. 1896 A, p. 442. (Mesohippus.)
Cope, E. D. 1874 B, p. 496. (Anchitherium.)
1881 G, p. 399. (Mesohippus.)
1884 O, p. 714. (Anchitherium.)
1887 N, p. 1067. (Mesohippus.)
1892 S, p. 412. (Miohippus.)
1894 D, p. 791. (Mesohippus, Miohippus.)
Dana, J. D. 1896 A, p. 913, fig. 1540. (Miohippus, Mesohippus.)
Farr, M. S. 1896 A, p. 150. (Mesohippus.)
Huxley, T. H. 1876 C, pp. 292, 294. (Miohippus, Mesohippus.)
Landois, —1881 A, p. 128 (Protohippus); p. 29 (Mesohippus).
Lydekker, R. 1886 A, p. 45. (Mesohippus.)
Marsh, O. C. 1874 D, p. 66. (Miohippus.)
1875 B, p. 248. (Mesohippus, type *Anchitherium bairdi.*)
1876 G, p. 61. (Mesohippus.)
1877 E, p. 359. (Miohippus, Mesohippus.)
1879 D, p. 504. (Miohippus, Mesohippus.)
1892 C, p. 354. (Miohippus, Mesohippus.)
1898 E, p. 568. (Miohippus, Mesohippus.)
Nicholson and Lydekker 1889 A, p. 1358 (Mesohippus); p. 1359 (Miohippus).

Osborn, H. F. in Scott and Osborn 1890 B, p. 87. (Mesohippus.)
Osborn and Wortman 1895 A, p. 352. (Mesohippus.)
Pavlow, M. 1888 A. (Mesohippus.)
Schlosser, M 1886 B, p. 14. (Miohippus and Mesohippus, syns. of Anchitherium.)
Scott, W. B. 1886 B. (Miohippus, Mesohippus.)
    1891 B. (Mesohippus.)
    1893 B, p. 660. (Miohippus, Mesohippus.)
    1895 C, p. 79. (Miohippus, Mesohippus.)
Scott and Osborn 1887 B, p. 171. (Mesohippus.)
    1890 B, p. 87. (Mesohippus.)
Steinmann and Döderlein 1890 A, p. 781. (Mesohippus.)
Tomes, C. S. 1898 A. p. 415.
Weithofer, A. 1888 A, p. 278.
Woodward, A. S. 1898 B, p. 328. (Mesohippus.)
Wortman, J. L. 1883 A, p. 710. (Anchitherium.)
    1893 A. (Mesohippus.)
Zittel, K. A. 1893 B, p. 249. (Mesohippus.)

Miohippus agrestis (Leidy).

Leidy, J. 1873 B, pp. 251, 323, pl. vii, figs. 16, 17. (Anchitherium.)
Cope, E. D. 1874 B, p. 498. (Anchitherium.)
Matthew, W. D. 1899 A, p. 56. (Syn. of Anchippus texanus.)
Roger, O. 1896 A, p. 174. (Mesohippus.)
Trouessart, E. L. 1898 A, p. 781. (Mesohippus.)
    Miocene; Montana.

Miohippus anceps Marsh.

Marsh, O. C. 1874 B, p. 250. (Anchitherium.)
Cope, E. D. 1886 H, p. 368. (Syn.? of Anchitherium equiceps.)
King, C. 1878 A, p. 424.
Marsh, O. C. 1892 C, p. 350, figs. 20, 21.
Matthew, W. D. 1899 A, p. 63. (Mesohippus.)
Roger, O. 1896 A, p. 174.
Scott, W. B. 1893 B, p. 659.
    1895 C, p. 113.
Trouessart, E. L. 1898 A, p. 781.
Zittel, K. A. 1893 B, p. 250, fig. 194. (Anchitherium.)
    Miocene (John Day); Oregon.

Miohippus annectens Marsh.

Marsh, O. C. 1874 B, p. 249.
King, C. 1878 A, p. 424.
Marsh, O. C. 1894 F, p. 91.
Matthew, W. D. 1899 A, pp. 56, 63. (Mesohippus.)
Roger, O. 1896 A, p. 174.
Scott, W. B. 1893 B, p. 659.
    1895 C, p. 80, pl. i, figs. 6–8. (M. annectens.?)
Trouessart, E. L. 1898 A, p. 781.
    Oligocene? (White River); Montana?: Miocene (John Day); Oregon.

Miohippus australis (Leidy).

Leidy, J. 1873 B, pp. 250, 323, pl. xx, fig. 19. (Anchitherium.)
Cope, E. D. 1893 A, p. 23. (Anchitherium.)
Matthew, W. D. 1899 A, p. 69. (Syn. of Anchippus texanus.)
Roger, O. 1896 A, p. 174. (Mesohippus.)
Trouessart, E. L. 1898 A, p. 781. (Mesohippus.)
    Miocene (Loup Fork); Texas.

Miohippus bairdi (Leidy).

Leidy, J. 1850 C, p. 122. (Palæotherium.)
Cope, E. D. 1873 CC, p. 14. (Anchitherium.)
    1874 B, p. 496. (Anchitherium.)
    1879 D, p. 75. (Anchitherium.)
Farr, M. S. 1896 A, pl. xiii, text figs. 1–4. (Mesohippus.)
Hayden, F. V. 1858 B, p. 158. (Anchitherium.)
King, C. 1878 A, p. 412. (Mesohippus.)
Leidy, J. 1852 J, p. 572. (Anchitherium.)
    1852 L, p. 64. (Palæotherium.)
    1854 A, p. 67, pl. x, figs. 14–21; pl. xi. (Anchitherium.)
    1869 A, pp. 333, 402, pl. xx. (Anchitherium.)
    1870 P, p. 112. (Anchitherium.)
    1871 C, p. 362. (Anchitherium.)
    1873 B, pp. 218, 322, pl. vii, fig. 15. (Anchitherium.)
Lydekker, R. 1886 A, p. 49. (Anchitherium.)
Marsh, O. C. 1874 B, p. 250. (Anchitherium.)
    1875 B, p. 248. (Mesohippus.)
Matthew, W. D. 1899 A, p. 55. (Mesohippus.)
Nicholson and Lydekker 1889 A, p. 1359. (Mesohippus.)
Osborn, H. F. 1896 B, p. 174. (Titanotherium.)
Osborn and Wortman 1894 A, p. 218. (Mesohippus.)
    1895 A, p. 353. (Mesohippus.)
Pavlow, M. 1888 A, p. 148, pl. i, figs. 4, 13. (Anchitherium.)
Roger, O. 1896 A, p. 173. (Mesohippus.)
Scott, W. B. 1891 B, pls. xxii, xxiii.
Scott and Osborn 1887 B, p. 171. (Mesohippus.)
    1890 B, p. 87, figs. 10, 11. (Mesohippus.)
Trouessart, E. L. 1898 A, p. 780. (Mesohippus.)
Zittel, K. A. 1893 B, p. 250, fig. 191. (Mesohippus.)
    Oligocene (White River); South Dakota, Nebraska, Colorado, Oregon?.

Miohippus brachylophus (Cope).

Cope, E. D. 1879 D, p. 74. (Anchitherium.)
    1879 B, p. 58. (Anchitherium.)
    1894 D. (Anchitherium or Miohippus.)
Matthew, W. D. 1899 A, p. 63. (Mesohippus.)
Roger, O. 1896 A. p. 174.
Trouessart, E. L. 1898 A, p. 781.
    Miocene (John Day); Oregon.

Miohippus celer Marsh.

Marsh, O. C. 1874 B, p. 251. (Anchitherium.)
Cope, E. D. 1874 B, p. 497. (Anchitherium.)
King, C. 1878 A, p. 412. (Mesohippus.)
Marsh, O. C. 1875 B, p. 248. (Mesohippus.)
    1892 C, p. 350, figs. 18, 19. (Mesohippus.)
    1897 C, p. 524, fig. 101.
Matthew, W. D. 1899 A, p. 56. (Mesohippus.)
Osborn and Wortman 1895 A, p. 353. (Mesohippus.)
Roger, O. 1896 A, p. 174.
Trouessart, E. L. 1898 A, p. 780. (Mesohippus.)
Zittel, K. A. 1893 B, p. 250, fig. 192. (Mesohippus.)
    Oligocene (White River); Colorado?.

Miohippus condoni (Leidy).

Leidy, J. 1870 P, p. 112. (Anchitherium.)
Cope, E. D. 1879 D, p. 76. (Anchitherium.)

King, C. 1878 A, p. 424.
Leidy, J. 1871 C, p. 362. (Anchitherium.)
1871 J. (Anchitherium.)
1873 B, pp. 218, 323, pl. ii, fig. 5. (Anchitherium.)
Marsh, O. C. 1874 B, p. 249. (Anchitherium.)
Matthew, W. D. 1899 A, p. 63. (Mesohippus.)
Roger, O. 1896 A, p. 174.
Trouessart, E. L. 1898 A, p. 781.
Miocene (John Day); Oregon.

Miohippus copei (Osb. and Wort.).

Osborn and Wortman 1895 A, pp. 353, 356, fig. 5. (Mesohippus and Anchitherium.)
Farr, M. S. 1896 A, p. 164, fig. 5. (Mesohippus.)
Matthew, W. D. 1899, A, p. 56. (Mesohippus.)
Trouessart, E. L. 1898 A, p. 781. (Mesohippus.)
Oligocene (White River); South Dakota.

Miohippus cuneatus (Cope).

Cope, E. D. 1873 T, p. 7. (Anchitherium.)
1873 CC, p. 14. (Anchitherium.)
1874 B, p. 497. (Anchitherium.)
1879 D, p. 76. (Anchitherium.)
Matthew, W. D. 1899 A, p. 56. (Syn. of M. bairdi.)
Osborn and Wortman 1895 A, p. 353, footnote. (Mesohippus.)
Roger, O. 1896 A, p. 174. (Mesohippus.)
Scott, W. B. 1895 C, p. 113. (Mesohippus.)
Trouessart, E. L. 1898 A, p. 780. (Mesohippus.)
Oligocene (White River); Colorado.

Miohippus equiceps (Cope).

Cope, E. D. 1879 D, p. 73. (Anchitherium.)
1879 B, p. 58. (Anchitherium.)
1886 H, p. 368. (Anchitherium anceps?)
1889 C, p. 271, fig. 83. (Anchitherium.)
1894 D, p. 791. (Anchitherium or Miohippus.)
Matthew, W. D. 1899, A, pp. 56, 63. (Mesohippus.)
Roger, O. 1896 A, p. 174.
Scott, W. B. 1895 C, p. 79.
Trouessart, E. L. 1898 A, p. 781.
Miocene (John Day); Oregon. Oligocene? (White River?); Montana?:

Miohippus exoletus (Cope).

Cope, E. D. 1874 B, p. 496. (Anchitherium.)
1879 D, p. 76. (Anchitherium.)
1894 D, p. 791. (Anchitherium.)
Matthew, W. D. 1899 A, p. 56. (Syn. of M. bairdi.)
Osborn and Wortman 1895 A, p. 353. (Mesohippus.)
Roger, O. 1896 A, p. 174. (Mesohippus.)
Trouessart, E. L. 1898 A, p. 782. (Anchitherium.)
Oligocene (White River); Colorado.

Miohippus intermedius (Osb. and Wort.).

Osborn and Wortman 1895 A, pp. 353, 354, fig. 4. (Mesohippus.)
Farr, M. S. 1896 A, p. 169, fig. 6. (Mesohippus.)
Matthew, W. D. 1899 A, p. 56. (Mesohippus.)
Trouessart, E. L. 1898 A, p. 781. (Mesohippus.)
Oligocene (White River); South Dakota, Nebraska.

Miohippus longicristis (Cope).

Cope, E. D. 1879 D, p. 75. (Anchitherium.)
1879 B, p. 58. (Anchitherium.)
1886 H, p. 368. (Anchitherium.)
1894 D, p. 791. (Anchitherium.)
Matthew, W. D. 1899 A, p. 63. (Mesohippus.)
Roger, O. 1896 A, p. 174.
Scott and Osborn 1890 B, p. 88, fig. 12. (Anchitherium.)
Trouessart, E. L. 1898 A, p. 782.
Zittel, K. A. 1893 B, p. 251, fig. 195. (Anchitherium.)
Miocene (John Day); Oregon.

Miohippus præstans (Cope).

Cope, E. D. 1879 S. (Anchitherium.)
1887 N, p. 1069, fig. 36. (Anchitherium.)
1889 B, p. 455. (Anchitherium.)
1894 D, p. 791. (Anchitherium.)
Farr, M. S. 1896 A, p. 163. (Mesohippus.)
Matthew, W. D. 1899 A, p. 63. (Mesohippus.)
Osborn and Wortman 1895 A, p. 356. (Anchitherium.)
Roger, O. 1896 A, p. 174.
Trouessart, E. L. 1898 A, p. 782. (Anchitherium.)
Miocene (John Day); Oregon.

Miohippus ultimus (Cope).

Cope, E. D. 1886 B, p. 357. (Anchitherium.)
1886 H, p. 368. (Anchitherium.)
1887 N, p. 1068. (Anchitherium.)
Farr, M. S. 1896 A, p. 169. (Anchitherium.)
Matthew, W. D. 1899 A, p. 69. (Mesohippus.)
Roger, O. 1896 A, p. 174.
Trouessart, E. L. 1898 A, p. 782.
Miocene (Loup Fork); Oregon.

Miohippus westonii (Cope).

Cope, E. D. 1889 I, p. 153. (Anchitherium.)
Ami, H. M. 1891 A. (Anchitherium.)
Cope, E. D, 1891 A, p. 20, pl. xiv, figs. 1, 2. (Anchitherium.)
Matthew, W. D. 1899 A, p. 56. (Mesohippus.)
Roger, O. 1896 A, p. 174. (Mesohippus.
Trouessart, E. L. 1898 A, p. 781. (Mesohippus.)
Oligocene (White River); Canada.

ANCHITHERIUM Meyer. Type *A. aurelianense* (Blainv.).

Meyer, H. 1844 A, p. 298.
Ameghino, F. 1896 A, p. 442.
Blainville, H. M. D. 1864 A, iv, Y, pl. vii. ("Palæotherium hippoides, *ou* equinum, *ou* aurelianense.")
Cope, E. D. 1874 B, p. 496.
1881 G, p. 899.
Cope, E. D. 1884 O, p. 714.
1887 N, p. 1067.
1889 C, p. 255 *et seq.*
1892 S, p. 412.
1894 D, p. 791.
Dawkins, W. B. 1870 A.
Depéret, C. 1887 A, p. 213.

Filhol, H. 1891 A, p. 169.
Flower, W. H. 1876 B, xiii, p. 327.
Gaudry, A. 1878 B, p. 124.
Gervais, P. 1859 A, p. 83.
Huxley, T. H. 1870 B, p. xlix.
1872 A, p. 306.
1876 B, xiv, p. 34.
1876 C, pp. 292, 294.
Kowalevsky, W. 1873 B.
Leidy, J. 1854 A, pp. 67, 114.
1869 A, p. 103.
1871 C, p. 362.
Leuthardt, F. 1891 A.
Lydekker, R. 1886 A, p. 45.
Major, Fors. 1873 A, p. 103.
1877 A.
Marsh, O. C. 1874 B, p. 247.
Nicholson and Lydekker 1889 A, p. 1358.
Osborn and Wortman, 1895 A, p. 352.
Pavlow, M. 1888 A.
Pomel, A. 1847 A, pp. 202, 203, 207.
Schlosser, M. 1886 B, p. 14.
Scott, W. B. 1886 B.
Scott, W. B. 1891 B.
1891 D, p. 90.
1893 B, p. 660.
1895 C, p. 94.
Scott and Osborn 1890 B, p. 88.
Steinmann and Döderlein 1890 A, p. 781.
Weithofer, A. 1888 A, p. 278.
Wilckens, M. 1884 A.
Woodward, A. S. 1898 B, p. 327.
Wortman, J. L. 1882 B, vi, p. 69.
1883 A, p. 710.
1893 A.
Zittel, K. A. 1893 B, p. 250.

Anchitherium equinum Scott.

Scott, W. B. 1893 B, p. 661.
Cope, E. D. 1894 D, p. 790.
Matthew, W. D. 1899 A, p. 69.
Roger, O. 1896 A, p. 174.
Scott, W. B. 1895 C, p. 94, pl. iii, figs. 23-28; pl. iv, figs. 30, 31.
Trouessart, E. L. 1898 A, p. 782.
Miocene (Loup Fork); Montana.

DESMATIPPUS Scott. Type *D. crenidens* Scott.

Scott, W. B. 1893 B, p. 661.
Cope, E. D. 1894 D, p. 790. (Syn. of Anchitherium.)
Scott, W. B. 1895 C, p. 84.
Trouessart, E. L. 1898 A, p. 783. (Desmathippus.)

Desmatippus crenidens Scott.

Scott, W. B. 1893 B, p. 661.
Cope, E. D. 1894 D, p. 791. (Anchitherium.)
Matthew, W. D. 1899 A, p. 69. (Anchippus.)
Roger, O. 1896 A, p. 175.
Scott, W. B. 1895 C, p. 84, pl. ii, figs. 9-14.
Trouessart, E. L. 1898 A, p. 783. (Desmathippus.)
Miocene (Loup Fork); Montana.

ANCHIPPUS Leidy. Type *A. texanus* Leidy.

Leidy, J. 1868 I, p. 232.
Cope, E. D. 1884 O, p. 714.
1887 N, p. 1067.
1892 W, p. 943.
1893 A, p. 22.
Dawkins, W. B. 1870 A.
Leidy, J. 1869 A, p. 312.
1871 C, p. 362.
Marsh, O. C. 1874 B, p. 254.
Matthew, W. D. 1899 A, p. 22.
Nicholson and Lydekker 1889 A, p. 1359.

Anchippus brevidens Marsh.

Marsh, O. C. 1874 B, p. 254.
Cope, E. D. 1892 H, p. 326.
1892 W, p. 943.
Cope, E. D. 1893 A, p. 23.
King, C. 1878 A, p. 443.
Matthew, W. D. 1899 A, p. 69.
Roger, O. 1896 A, p. 175.
Trouessart, E. L. 1898 A, p. 783.
Miocene (Loup Fork); Oregon.

Anchippus texanus Leidy.

Leidy, J. 1868 I, p. 231.
1869 A, pp. 312, 403, pl. xxi, fig. 13.
1871 C, p. 362.
Marsh, O. C. 1874 B, p. 254.
Matthew, W. D. 1899 A, p. 56.
Roger, O. 1896 A, p. 175.
Trouessart, E. L. 1898 A, p. 783.
Miocene (Loup Fork?); Texas, Colorado.

HYPOHIPPUS Leidy. Type *H. affinis* Leidy.

Leidy, J. 1858 E, p. 26. (Subgenus.)
Cope, E. D. 1892 H, p. 326.
1892 W, p. 943. (Syn. of Protohippus.)
1893 A, p. 20. (Syn. of Protohippus.)
Leidy, J. 1869 A, p. 311.
1871 C, p. 362.
Marsh, O. C. 1874 B, p. 255.
Nicholson and Lydekker 1889 A, p. 1359.
Schlosser, M. 1886 B, p. 14.
Zittel, K. A. 1893 B, p. 250. (Syn.? of Anchitherium.)

Hypohippus affinis Leidy.

Leidy, J. 1858 E, p. 26. [Anchitherium(Hypohippus).]
Cope, E. D. 1893 A, p. 22.
Hayden, F. V. 1858 B, p. 158.
Leidy, J. 1869 A, pp. 311, 402, pl. xxi, figs. 11, 12.
1871 C, p. 362.
Roger, O. 1896 A, p. 174.
Trouessart, E. L. 1898 A, p. 783.
Pliocene; South Dakota.

EQUINÆ.

Boule, M. 1899 A, p. 531. ("Équidés.")
Osborn, H. F. 1893 D, p. 137.
Osborn and Wortman 1892 A, p. 93.
Roger, O. 1896 A, p. 175.
Steinmann and Döderlein 1890 A, p. 782.
Zittel, K. A. 1893 B, p. 252.

MERYCHIPPUS Leidy. Type *M. insignis* Leidy.

Leidy, J. 1856 Q, p. 311.
Unless otherwise indicated, the following authors refer to this genus under the name *Protohippus*.
Ameghino, F. 1891 C, p. 215.
Cope, E. D. 1873 R, p. 420.
1877 K, p. 322.
1881 G, p. 399.
1884 O, p. 714.
1887 N, p. 1068.
1889 C.
1892 H, p. 826. (Parahippus.)
1892 W, p. 943. (Merychippus, Parahippus.)
1893 A, p. 20. (Protohippus; Merychippus a synonym.)
Dana, J. D. 1896 A, p. 913, fig. 1540.
Dawkins, W. B. 1870 A.
Farr, M. S. 1896 A, p. 169.
Flower and Lydekker 1891 A, p. 380.
Gaudry, A. 1877 A. (Merychippus.)
Huxley, T. H. 1876 C, p. 294.
Landois, —— 1881 A, p. 128.
Leidy, J. 1858 E, p. 26 (Protohippus, type *P. perditus*); p. 27 (Merychippus).
1869 A, p. 275 (Protohippus); p. 292 (Merychippus); p. 313 (Parahippus).
1870 T, p. 127.
1871 C, p. 360 (Protohippus); p. 361 (Merychippus); p. 362 (Parahippus).
Major, Fors. 1873 A, p. 103. (Merychippus.)
Marsh, O. C. 1877 E.
1879 D, p. 504.
1892 C, p. 354.
Matthew, W. D. 1899 A, p. 69.
Nicholson and Lydekker 1889 A, p. 1359 (Parahippus); p. 1360 (Protohippus).
Pavlow, M. 1888 A. (Protohippus, Merychippus.)
1892 A.
Roger, O. 1889 A.
Rütimeyer, L. 1862 A, p. 611, (Merychippus.)
1877 A. (Merychippus.)
Schlosser, M. 1886 B, p. 14 (Merychippus, Parahippus); p. 15 (Protohippus, syn. of Hipparion).
Scott, W. B. 1891 D, p. 90 (Merychippus); p. 93 (Protohippus).
1895 C, p. 79. (Protohippus.)
Steinmann and Döderlein 1890 A, p. 782 (Merychippus); p. 783 (Protohippus).
Weithofer, A. 1888 A, p. 276.
Woodward, A. S. 1898 B, p. 337.
Wortman, J. L. 1882 B, vi, p. 71.
1883 A, p. 711.
Zittel, K. A. 1893 B, p. 252 (Merychippus); p. 255 (Protohippus).

Merychippus avus (Marsh).

Marsh, O. C. 1874 B, p. 253. (Protohippus.)
King, C. 1878 A, p. 443. (Protohippus.)
Marsh, O. C. 1897 C, p. 524, fig. 100. (Protohippus.)
Matthew, W. D. 1899 A, p. 70. (Protohippus.)
Trouessart, E. L. 1898 A, p. 785. (Protohippus.)
Miocene (Loup Fork); Oregon.

Merychippus castilli (Cope).

Cope, E. D. 1885 S, p. 1208, pl. xxxvii, fig. 6. (Protohippus.)
1886 W, p. 150, fig. 2. (Protohippus.)
1893 A, p. 26. (Protohippus.)
Matthew, W. D. 1899 A, p. 70. (Protohippus.)
Roger, O. 1896 A, p. 177. (Protohippus.)
Trouessart, E. L. 1898 A, p. 784. (Protohippus.)
Miocene (Loup Fork); Mexico.

Merychippus cumminsii (Cope).

Cope, E. D. 1893 A, p. 67, pl. xx, fig. 7; pl. xxiii, fig. 1. (Equus.)
1894 A, p. 67. (Equus.)
1899 A, p. 255. (Equus.)
Gidley, J. W. 1901, Bull. Amer. Mus. Nat. Hist., xiv, p. 126. (Protohippus.)
Matthew, W. D. 1899 A, p. 75. (Equus.)
Trouessart, E. L. 1898 A, p. 791. (Equus.)
Pliocene (Blanco); Texas, Oklahoma?.

Merychippus fossulatus (Cope).

Cope, E. D. 1893 A, p. 30, pls. v, vi, vii. (Protohippus.)
Matthew, W. D. 1899 A, p. 70. (Pliohippus.)
Roger, O, 1896 A, p. 177. (Protohippus.)
Trouessart, E. L. 1898 A, p. 784. (Protohippus.)
Miocene (Loup Fork); Texas.

Merychippus insignis Leidy.

Leidy, J. 1856 Q, p. 311,
Cope, E. D. 1874 P, p. 13. (Protohippus.)
1889 B, p. 457. (Protohippus.)
1892 W, p. 944, pl. xxvi, fig. 4 (Protohippus insignis); fig. 5, (P. medius).
1893 A, p. 25. (Syn. in part of Protohippus medius; in part of P. sejunctus.)
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 430.
Leidy, J. 1858 E, p. 27.
1869 A, pp. 296, 402, pl. xvii, figs. 3–7.
1871 C, p. 361.
Major, Fors. 1877 A.
Matthew, W. D. 1899 A, p. 69. (Protohippus medius.)
Osborn, H. F. 1898 I, p. 107, fig. 20.
Roger, O. 1896 A, p. 175 (Protohippus insignis); p. 177 (P. medius).
Scott, W. B. 1893 B, p. 659. (Protohippus.)
Trouessart, E. L. 1898 A, p. 784. (Protohippus sejunctus, part; P. medius, part.)
Weithofer, A. 1888 A, p. 278.
Zittel, K. A. 1893 B, p. 252, fig. 196.
Miocene (Loup Fork); South Dakota, Kansas, Oregon, Mexico.

Merychippus labrosus (Cope).

Cope, E. D. 1874 P, p. 13. (Protohippus.)
1874 B, p. 523. (Protohippus.)
1893 A, p. 26. (Protohippus.)
Matthew, W. D. 1899 A, p. 69. (Protohippus labrosus; syn. of P. perditus.)
Roger, O. 1896 A, p. 177. (Protohippus.)
Trouessart, E. L. 1898 A, p. 784. (Protohippus.)
Miocene (Loup Fork); Colorado.

Merychippus lenticularis (Cope).

Cope, E. D. 1893 A, p. 41, pl. xii, figs. 1, 2. (Protohippus.)
Matthew, W. D. 1899 A, p. 75. (Protohippus.)
Roger, O. 1896 A, p. 177. (Protohippus.)
Trouessart, E. L. 1898, p. 784. (Protohippus.)
Pliocene (Palo Duro); Texas.

Merychippus mirabilis Leidy.

Leidy, J. 1858 E, p. 27.
Cope, E. D. 1892 W, p. 943. (Protohippus.)
1893 A, p. 32, pl. viii; pl. ix, fig. 1; pl. x, fig. 4?. (Protohippus.)
Hayden, F. V. 1858 F, p. 158.
King, C. 1878 A, p. 430.
Leidy, J. 1869 A, pp. 299, 327, 402, pl. xvii, figs. 8–15; pl. xxvii, fig. 1.
1870 J, p. 67.
1871 C, p. 361.
1873 B, pp. 248, 250, 322, pl. xx, figs. 16, 20. (M. mirabilis?.)
Matthew, W. D. 1899 A, p. 70. (Pliohippus.)
Roger, O. 1896 A, p. 175.
Trouessart, E. L. 1898 A, p. 784. (Protohippus.)
Weithofer, A. 1888 A, p. 278.
Miocene (Loup Fork); Nebraska, Colorado, South Dakota, Texas, Utah?.

Merychippus pachyops (Cope.)

Cope, E. D. 1892 W, p. 944, pl. xxvi, fig. 1. (Protohippus.)
1893 A, p. 26, pl. xi, fig. 1; pl. xii; pl. xvii, figs. 2, 3. (Protohippus.)
Matthew, W. D. 1899 A, p. 70. (Pliohippus.)
Roger, O. 1896 A, p. 177. (Protohippus.)
Trouessart, E. L. 1898 A, p. 783. (Protohippus.)
Miocene (Loup Fork); Texas.

Merychippus parvulus (Marsh.)

Marsh, O. C. 1868 A, p. 374. (Equus.)
Cope, E. D. 1892 H, p. 326. (Protohippus.)
1892 W, p. 943. (Protohippus.)
1893 A, pp. 25, 29, pl. xi figs. 1, 2. (Protohippus parvulus?.)
King, C. 1878 A, p. 430. (Protohippus.)
Leidy, J. 1868 D, p. 195. ("Equus.")
1869 A, p. 400. (Equus.)
1871 C, p. 360. (Equus.)
1873 B, pp. 252, 323, pl. xx, fig. 23. ("Anchitherium?")
Marsh, O. C. 1874 B, p. 251. (Protohippus.)
Matthew, W. D. 1899 A, p. 69. (Syn. of Protohippus placidus.)
Osborn, H. F. 1890 B, p. 89. (Anchitherium?)
Roger, O. 1896 A, p. 174 (Mesohippus?); p. 177 (Protohippus).
Trouessart, E. L. 1898 A, p. 785. (Subsp. of Protohippus placidus.)
Miocene (Loup Fork); Nebraska, Texas?.

Merychippus perditus (Leidy.)

Leidy, J. 1858 E, p. 26. [Equus (Protohippus).]
Burmeister, H. 1875 A, p. 12. (Protohippus.)
Cope, E. D. 1874 B, pp. 524, 528. (Protohippus.)
1874 P, p. 18. (Protohippus.)
1889 B, p. 447, pl. ii, figs. 9, 12. (Protohippus profectus.)
1892 W, p. 943, pl. xxvi, fig. 2. (Protohippus.)
1893 A, pp. 24, 42, pl. x, fig. 2. (Protohippus.)
1894 A, p. 66. (Protohippus.)
Hayden, F. V. 1858 B, p. 158. (Equus perditus, Parahippus cognatus.)
King, C. 1878 A, p. 430. (Protohippus.)
Leidy, J. 1858 E, p. 26. [Anchitherium (Parahippus) cognatus.]
1869 A, pp. 275, 327, 400, pl. xvii, figs. 1, 2; pl. xxvii, fig. 5 (Protohippus perditus); pl. xxi, figs. 7–10 (Parahippus cognatus).
1870 J, p. 67. (Protohippus.)
1870 W, p. 127. (Protohippus.)
1871 C, p. 360 (Protohippus perditus); p. 362 (Parahippus cognatus).
1873 B, pp. 248–250, 322, pl. xx, figs. 16, 20. (Protohippus.)
Matthew, W. D. 1899 A, pp. 69, 75. (Protohippus.)
Roger, O. 1896 A, p. 175 (Parahippus cognatus); p. 177 (Protohippus perditus).
Trouessart, E. L. 1898 A, p. 784. (Protohippus.)
Miocene (Loup Fork); Nebraska, Colorado, Oklahoma, Kansas, Wyoming: Pliocene (Palo Duro); Texas.

Merychippus phlegon Hay.

Hay, O. P. 1899 G, p. 345. (Equus.)
Cope, E. D. 1893 A, pp. 44, 66, 67, pl. xx, fig. 8 (Equus minutus, preoccupied.)
1893 Q, p. 812. (E. minutus.)
1899 A, p. 255. (E. minutus.)
Gidley, J. W. 1901, Bull. Amer. Mus. Nat. Hist., xiv, p. 127, figs. 18, 19. (Protohippus.)
Matthew, W. D. 1899 A, p. 75. (E. minutus.)
Trouessart, E. L. 1898 A, p. 791. (E. minutus.)
Pliocene (Blanco); Texas.

Merychippus placidus (Leidy.)

Leidy, J. 1869 A, pp. 277, 328, 401, pl. xviii, figs. 39–48; pl. xxvii, figs. 6, 7. (Protohippus.)
Cope, E. D. 1873 R, p. 420. (Protohippus.)
1874 B, pp. 524, 528. (Protohippus.)
1874 P, p. 19. (Protohippus.)
1892 H, p. 325. (Protohippus.)
1892 W, p. 942, pl. xxv. (Protohippus.)
1893 A, pp. 26, 34, pl. xi, figs. 3–8. (Protohippus.)
1893 Q, p. 812. (Protohippus.)
Leidy, J. 1870 W, p. 127. (Protohippus.)
1871 C, p. 360. (Protohippus.)
1873 B, pp. 249, 250, 322, pl. xx, figs. 17, 18. (Protohippus.)
Matthew, W. D. 1899 A, p. 69. (Protohippus.)

Roger, O. 1896 A, p. 177. (Protohippus.)
Trouessart, E. L. 1898 A, p. 785. (Protohippus.)
Miocene (Loup Fork); Nebraska, Colorado, South Dakota, Texas,

Merychippus sejunctus (Cope.)

Cope, E. D. 1874 P, p. 15. (Protohippus.)
1873 R, p. 420. (Protohippus; no description.)
1874 B, pp. 523, 524. (Protohippus.)
1881 I, p. 271, fig. 3. (Protohippus.)
1884 J, p. 544, fig. 3. (Protohippus.)
1886 B, p. 359. (Protohippus.)
1886 H. (Protohippus.)
1887 N, p. 1071, fig. 39. (Protohippus.)
1887 S, p. 271, fig. 3. (Protohippus.)
1889 C, p. 160. (Protohippus.)
1893 A, pp. 23, 25. (Protohippus.)
Matthew, W. D. 1899 A, p. 69. (Protohippus.)
Roger, O. 1896 A, p. 177. (Protohippus.)
Scott, W. B. 1893 B, p. 659. (Protohippus.)
Trouessart, E. L. 1898 A, p. 784. (Protohippus,)
Woodward, A. S. 1898 B, p. 337, fig. 194. (Protohippus.)
Wortman, J. L. 1883 A, p. 711, figs. 141, 142. (Protohippus.)
Zittel, K. A. 1893 B, p. 256, figs. 200, 201. (Protohippus.)
Miocene (Loup Fork); Colorado, Montana, Oregon? New Mexico?.

Merychippus supremus (Leidy.)

Leidy, J. 1869 A, pp. 328, 401, pl. xxvii, figs. 3, 4. (Protohippus.)
Cope, E. D. 1893 A, p. 25. (Syn. of Protohippus mirabilis.)
King, C. 1878 A, p. 430. (Protohippus.)
Leidy, J. 1870 W, p. 127. (Protohippus.)
1871 C, p. 360. (Protohippus.)
Matthew, W. D. 1899 A, p. 70. (Syn. of Protohippus mirabilis.)
Roger, O. 1896 A, p. 177. (Protohippus.)
Trouessart, E. L. 1898 A, p. 784. (Syn.? of Protohippus mirabilis.)
Miocene (Loup Fork); South Dakota.

Merychippus sp. indet.

Cope, E. D. 1877 K, p. 323, pl. lxxxv, fig. 7. (Protohippus sp.)
Miocene (Loup Fork); New Mexico.

Merychippus sp. indet.

Scott, W. B. 1895 C, p. 93, pl. ii, fig. 17. (Protohippus sp.)
Trouessart, E. L. 1898 A, p. 784. (Syn.? of Protohippus mirabilis.)
Miocene; Montana.

PLIOHIPPUS Marsh. Type *P. pernix* Marsh.

Marsh, O. C. 1874 B, p. 252.
Cope, E. D. 1879 A, p. 47. (Syn. of Hippidium.)
1880 B, p. 47. (Syn. of Hippidium.)
Dana, J. D. 1896 A, p. 913, fig. 1540.
Flower and Lydekker 1891 A, p. 381.
Landois, ——. 1881 A, p. 128.
Marsh, O. C. 1874 D.
1877 E, p. 359.
1879 D, p. 504.
1892 C, p. 354.
Matthew, W. D. 1899 A, p. 70.
Nicholson and Lydekker 1889 A, p. 1356.
Schlosser, M. 1886 B, p. 15.
Weithofer, A. 1888 A, p. 276.
Zittel, K. A. 1893 B, p. 256.

Pliohippus gracilis Marsh.

Marsh, O. C. 1892 C, p. 347.
Pliocene; Oregon.

Pliohippus pernix Marsh.

Marsh, O. C. 1874 B, p. 252.
Cope, E. D. 1880 G. (Hippidium.)
King, C. 1878 A, p. 430.
Marsh, O. C. 1897 C, pp. 524, 527, fig. 99.
Matthew, W. D. 1899 A, p. 70.
Roger, O. 1896 A, p. 177.
Trouessart, E. L. 1898 A, p. 785.
Miocene (Loup Fork); Nebraska, Colorado.

Pliohippus robustus Marsh.

Marsh, O. C. 1874 B, p. 253.
Cope, E. D. 1880 G. (Hippidium.)
King, C. 1878 A, p. 430.
Matthew, W. D. 1899 A, p. 70.
Roger, O. 1896 A, p. 177.
Trouessart, E. L. 1898 A, p. 785.
Miocene (Loup Fork); Nebraska.

Pliohippus simplicidens (Cope.)

Cope, E. D. 1892 J, p. 124, fig. 1. (Equus.)
1892 E, p. 252. (Equus.)
1892 G, p. 228. (Equus.)
1892 P. (Equus.)
1893 A, pp. 41, 44, 66, pl. xx, figs. 1–3. (Equus.)
Gidley, J. W., 1901, Bull. Amer. Mus. Nat. Hist., xiv, p. 123.
Trouessart, E. L. 1898 A, p. 785.
Pliocene (Palo Duro, Blanco); Texas.

HIPPIDION Owen. Type *Equus neogæus* Lund.

Owen, R. 1870 B, p. 572.
The amended form of this name, *Hippidium*, is employed by many authors.
Ameghino, F. 1889 A, p. 513.
1891 A.
1891 C, p. 215.
Branco, W. 1897 A, pp. 19, 78.
Burmeister, H. 1875 A.
1889 A, p. 3.
Cope, E. D. 1879 A, p. 47.
1880 B, p. 47.
1881 G, p. 400.
1884 O, p. 715.
1887 N, p. 1073.

Cope, E. D. 1893 A, p. 20.
1899 A, p. 256.
Gervais and Ameghino 1880 A, p. 87.
Lydekker, R. 1893 D, pt. iii, p. 74.
Nicholson and Lydekker 1889 A, p. 1361.
Pavlow, M. 1892 A.
Steinmann and Döderlein 1890 A, p. 784.
Wilckens, M. 1884 B, p. 331.
Woodward, A. S. 1898 B, p. 338.
Wortman, J. L. 1883 A, p. 711.
Zittel, K. A. 1893 B, p. 256.

Hippidion interpolatum Cope.

Cope, E. D. 1893 A, p. 42, pl. xii, figs. 3, 4. (Hippidium.)
Matthew, W. D. 1899 A, p. 75. (Pliohippus.)
Trouessart, E. L. 1898 A, p. 786.
Pliocene (Palo Duro); Texas.

Hippidion spectans Cope.

Cope, E. D. 1880 G. (Hippidium.)
1887 N, p. 1072, fig. 41. (Hippidium.)
1892 E, p. 253. (Hippidium.)
1893 A, p. 43, pl. xii, figs. 5, 6. (Hippidium? spectans.)
Matthew, W. D. 1899 A, pp. 70, 75. (Pliohippus.)
Roger, O. 1896 A, p. 178. (Pliohippus.)
Trouessart, E. L. 1892 A.
1898 A, p. 786.
Zittel, K. A. 1893 B, p. 256. (Pliohippus.)
Miocene (Loup Fork); Oregon: Pliocene (Palo Duro); Texas.

HIPPARION Christol.

Christol, J., 1832, Ann. Sci. Indust. Mid. France, i, p. 180.

Christol's name *Hipparion* for this genus antedates Kaup's *Hippotherium*. It is said by Christol (Bull. Soc. Geol. France, ix, 1852, p. 255) to have been defined, but the present writer has not been able to learn whether or not Christol described or designated a type species.

Ameghino, F. 1891 C, p. 215. (Hippotherium.)
Branco, W. 1897 A, pp. 19, 78. (Hipparion.)
Boule, M. 1899 A, p. 541. (Hipparion.)
Bronn, H. G. 1838 A, p. 1192 (Hippotherium); p. 1193 (Hipparion).
Cope, E. D. 1879 D, p. 76. (Stylonus, type *S. seversus* Cope.)
1881 G, p. 399. (Hippotherium.)
1884 O, p. 714. (Hippotherium.)
1887 N, p. 1068. (Hippotherium.)
1889 B, p. 430. (Hippotherium.)
1889 C, p. 256. (Hippotherium.)
1893 A, pp. 21, 36. (Hippotherium.)
Filhol, H. 1891 A, p. 186, seq. (Hipparion.)
Flower and Lydekker 1891 A, p. 380. (Hipparion.)
Gaudry, A. 1878 B, p. 124. (Hipparion.)
1890 A. (Hipparion.)
Gervais, P. 1859 A, p. 80. (Hipparion.)
Hensel, R. 1860 A. (Hipparion.)
Huxley, T. H. 1870 A, p. 439. (Hipparion.)
1870 B, p. xlix. (Hipparion.)
1872 A, p. 306. (Hipparion.)
Kaup, J. J. 1833 A, p. 327. (Hippotherium, type *H. gracilis* Kaup.)
1835 A. (Hippotherium.)
Kowalevsky, W. 1873 A, p. 220. (Hipparion.)
Leidy, J. 1854 C, p. 90. (Hippodon, type *H. speciosus* Leidy.)
1858 E, p. 27.
1869 A, p. 280. (Hipparion.)
1871 C, p. 360. (Hipparion.)
1873 B, p. 247. (Hipparion.)
Leuthardt, F. 1891 A. (Hippotherium.)
Lydekker, R. 1882 A. (Hipparion.)
1886 A, p. 50. (Hipparion.)
1891 A, p. 380. (Hipparion.)
Major, Fors. 1877 A. Hipparion.)
Marsh, O. C. 1874 B, p. 255. (Hipparion.)
1874 D. (Hipparion.)
Nicholson and Lydekker 1889 A, p. 1360. (Hipparion.)
Osborn, H. F. 1893 D, p. 7. (Hipparion.)
Owen, R. 1845 B, p. 573. (Hipparion.)
Pavlow, M. 1888 A. (Hipparion.)
1890 A. (Hipparion.)
1892 A. (Hipparion.)
Pictet. F. J. 1853 A, p. 314. (Hipparion, Hippotherium.)
Quenstedt, F. A. 1850 A. (Hippotherium.)
Rütimeyer, L. 1862 A, p. 646. (Hipparion.)
Schlosser, M. 1886 B, p. 15. (Hipparion.)
Scott, W. B. 1893 B, p. 661. (Hipparion.)
Steinmann and Döderlein 1890 A, p. 782.
Weithofer, A. 1888 A, p. 273. (Hipparion.)
Wilckens, M. 1884 A. (Hipparion.)
1888 A. (Hipparion.)
Woodward, A. S. 1898 B, p. 338. (Hipparion.)
Wortman, J. L. 1882 B, vi, p. 73. (Hippotherium.)
1883 A, p. 711. (Hippotherium.)
1886 A, p. 483. (Hippotherium.)
Zittel, K. A. 1893 B, p. 252. (Hipparion.)

Hipparion affine Leidy.

Leidy, J. 1869 A, pp. 286, 402, pl. xviii, figs. 20–24. (Hipparion.)
Cope, E. D. 1889 B, p. 434, fig. 1. (Hippotherium occidentale, not of Leidy; H. affine.)
1893 A, p. 36. (Hippotherium.)
Leidy, J. 1871 C, p. 361. (Hipparion.)
Lydekker, R. 1882 A, p. 70. (Hippotherium.)
Pavlow, M. 1888 A, pl. i, fig. 26. (Hipparion.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 786. (Hipparion.)
Miocene (Loup Fork); Nebraska, Texas.

Hipparion calamarium (Cope).

Cope, E. D. 1875 P, p. 259. (Hippotherium.)
1875 F, p. 70. (Hippotherium.)
1877 K, p. 321, pl. lxxv, figs. 1, 2. (Hippotherium.)
1889 B, p. 451, fig 15. (Hippotherium.)
1893 A, p. 22. (Hippotherium.)
Matthew, W. D. 1899 A, p. 70. (Hipparion.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 789. [Hipparion (Stylonus).]
Miocene (Loup Fork); New Mexico, Colorado.

Hipparion eurystylum (Cope).

Cope, E. D. 1893 A, pp. 43, 66, pl. xii, figs 7, 8; pl. xx, fig. 6. (Equus.)
1899 A, p. 255. (Equus.)
Gidley, J. W., 1901, Bull. Amer. Mus. Nat. Hist., xiv, p. 125. (Hipparion.)
Matthew, W. D. 1899 A, p. 75. (Equus.)
Trouessart, E. L. 1898 A, p. 791. (Equus.)
Pliocene (Goodnight?); Texas.

Hipparion gratum Leidy.

Leidy, J. 1869 A, pp. 287, 326, 402, pl. xviii, figs. 25, 30. (Hipparion.)
Cope, E. D. 1889 B, p. 445, figs. 16, 17. (Hippotherium.)
1892 H, p. 325. (Hippotherium.)
1892 W, p. 942. (Hippotherium.)
1893 A, pp. 21, 26. (Syn. of Protohippus placidus.)
Leidy, J. 1871 C, p. 361. (Hipparion.)
1885 A, p. 33, figure. (Hippotherium ingenuum.)
1887 A, p. 309. (Hippotherium.)
1889 B. (Hippotherium ingenuum.)
1889 E, p. 20, pl. iii, figs. 2–4; text figure. (Hippotherium ingenuum.)
1892 A. (Hippotherium ingenuum.)
Leidy and Lucas 1896 A, p. 49, pl. xviii, figs. 15, 16; pl. xix, figs. 9, 10. (Hippotherium.)
Lydekker, R. 1882 A, p. 70. (Hippotherium.)
Matthew, W. D. 1899 A, p. 69. (Syn. of Protohippus placidus.)
Roger, O. 1896 A, p. 176. (Hipparion ingenuum.)
Trouessart, E. L. 1898 A, p. 785. (Syn. of Protohippus placidus.)
Miocene (Loup Fork); Nebraska, Kansas.

Hipparion isonesum (Cope).

Cope, E. D. 1889 B, p. 451, fig. 23. (Hippotherium.)
1886 B, p. 359. (Hippotherium seversum, in part.)
Matthew, W. D. 1899 A, p. 70. (Hipparion.)
Trouessart, E. L. 1898 A, p. 789. [Hipparion (Stylonus).]
Miocene (Ticholeptus); Montana, Oregon, Colorado.

Hipparion minimum (Douglass).

Douglass, E. 1900 A, p. 26.
Miocene; Montana.

Hipparion montezumæ (Leidy).

Leidy, J., 1882, Proc. Acad. Nat. Sci. Phila., p. 291. (Hippotherium.)
Cope, E. D. 1889 B, p. 435. (Hippotherium.)
Leidy, J. 1889 E, p. 21, pl. v, figs. 5–7, 10. (Hippotherium.)
Matthew, W. D. 1899 A, p. 70. (Hipparion.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart. E. L. 1898 A, p. 787. (Hipparion montezumai.)
Miocene (Loup Fork); Mexico.

Hipparion occidentale Leidy.

Leidy, J. 1856 D, p. 59. (Hipparion.)
Cope, E. D. 1886 B, p. 359. (Hippotherium.)
1886 H. (Hippotherium.)
Cope, E. D. 1892 AA. (Hippotherium.)
1893 A, p. 36. (Hippotherium.)
Hayden, F. V. 1858 B, p. 158.
Leidy, J. 1856 B, p. 422. (Hipparion.)
1858 E, p. 27. (Hipparion.)
1869 A, pp. 281, 326, 401, pl. xviii, figs. 1–5; pl. xxvii, fig. 2.
1871 C, p. 361. (Hipparion.)
Lydekker, R. 1882 A, p. 70. (Hippotherium.)
Matthew, W. D. 1899 A, p. 70. (Hipparion.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 787. (Hipparion occidentale, in part.)
Wortman, J. L. 1883 A, p. 712. (Hippotherium.)
Miocene (Loup Fork); South Dakota, Texas.

Hipparion paniense (Cope).

Cope, E. D. 1874 P, p. 12. (Hippotherium.)
1874 B, p. 522. (Hippotherium.)
1889 B, p. 447, figs. 13, 14. (Hippotherium.)
Lydekker, R. 1882 A, p. 70. (Hippotherium.)
Matthew, W. D. 1899 A, p. 70. (Hipparion.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 788. (Hipparion.)
Miocene (Loup Fork); Colorado.

Hipparion peninsulatum (Cope).

Cope, E. D. 1885 S, pl. xxxvii, fig. 5. (Hippotherium; no description.)
1886 W, p. 150, fig. 1. (Hippotherium.)
1889 B, p. 436, fig. 4. (Hippotherium.)
Matthew, W. D. 1899 A, p. 70. (Hipparion.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 787. (Hipparion.)
Miocene (Loup Fork); Mexico.

Hipparion plicatile (Leidy).

Leidy, J. 1887 A, p. 309, figure. (Hippotherium.)
Cope, E. D. 1889 B, p. 444, fig. 6. (Hippotherium.)
Leidy, J. 1889 B. (Hippotherium.)
1889 E, p. 20. (Hippotherium.)
1892 AA. (Hippotherium.)
Leidy and Lucas 1896 A, p. 50, pl. xviii, figs. 11–14; pl. xix, figs. 1–8. (Hippotherium.)
Roger, O, 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 787. (Hipparion.)
Miocene; Florida.

Hipparion rectidens (Cope).

Cope, E. D. 1886 B, p. 360. (Hippotherium.)
1889 B, pp. 435, 458. (Hippotherium.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 787. (Hipparion.)
Miocene (Loup Fork); Mexico.

Hipparion relictum (Cope).

Cope, E. D. 1889 K, p. 254. (Hippotherium.)
1889 B, p. 449, figs. 19, 20. (Hippotherium.)
Matthew, W. D. 1899 A, p. 70. (Hipparion.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 788. (Hipparion.)
Pliocene (Blanco); Oregon.

Hipparion retrusum (Cope).

Cope, E. D. 1889 B, p. 446, figs. 7, 8. (Hippotherium.)
Trouessart, E. L. 1898 A, p. 788. (Hipparion.)
Miocene (Loup Fork); Kansas.

Hipparion seversum (Cope).

Cope, E. D. 1879 D, p. 76. (Stylonus.)
1886 H. (Hippotherium.)
1889 B, p. 457, fig. 24. (Hippotherium.)
Matthew, W. D. 1899 A, p. 71. (Hipparion.)
Trouessart, E. L. 1898 A, p. 779. [Hipparion (Stylonus).]
Wortman, J. L. 1883 A, p. 712. (Hippotherium.)
Miocene? (Ticholeptus); Oregon.

Hipparion sinclairii (Wort.).

Wortman, J. L, 1883 A, p. 712. (Hippotherium.)
Cope, E. D. 1886 B, p. 359. (Hippotherium.)
1886 H. (Hippotherium.)
1889 B, p. 434, fig. 2. (Hippotherium.)
Matthew, W. D. 1899 A, p. 70. (Hipparion.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 787. (Hipparion.)
Miocene (Loup Fork); Oregon.

Hipparion speciosum Leidy.

Leidy, J. 1854 C, p. 90. (Hippodon.)
Cope, E. D. 1875 F, p. 71. (Hippotherium.)
1877 K, p. 322, pl. lxxv, fig. 3. (Hippotherium.)
1887 N, p. 1070, fig. 38. (Hippotherium.)
1889 B, p. 436, fig. 5. (Hippotherium.)
Hayden, F. V. 1858 B, p. 158. (Hipparion.)
Leidy, J. 1856 Q, p. 311. [Hipparion (Hippodon).]
1858 E, p. 27. (Hipparion *seu* Hippotherium.)
1869 A, pp. 282, 401, pl. xviii, figs. 6-9. (Hipparion.)
1871 C, p. 361. (Hipparion.)
1873 B, pp. 247, 248, 322, pl. xx, figs. 14, 15. (Hipparion.)
Lydekker, R. 1882 A, p. 70. (Hippotherium.)
Matthew, W. D. 1899 A, p. 70. (Hipparion.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 787. (Hipparion.)
Wortman, J. L. 1883 A, p. 711, figs. 138, 139. (Hippotherium.)
Zittel, K. A. 1893 B, p. 253, fig. 198. (Hipparion.)
Miocene (Upper); South Dakota, New Mexico, Colorado, Texas, Kansas.

Hipparion sphenodus (Cope).

Cope, E. D. 1889 B, p. 449, figs. 21, 22. (Hippotherium.)
1874 P, p. 12. (Hippotherium speciosum, not of Leidy.)
1884 B, p. 522. (Hippotherium speciosum, not of Leidy.)
Matthew, W. D. 1899 A, p. 71. (Hipparion.)
Trouessart, E. L. 1898 A, p. 788. (Hipparion.)
Miocene (Loup Fork); Colorado.

Hipparion venustum Leidy.

Leidy, J. 1860 B, p. 105, pl. xvi, figs. 32, 33. (Hippotherium.)
Cope, E. D. 1889 B, p. 448, fig. 18. (Hippotherium.)
Leidy, J. 1853 E. (Hipparion venustum; no description.)
1869 A, p. 401. (Hipparion.)
1871 C, p. 361. (Hipparion.)
1877 A, p. 212. (Hipparion.)
Lydekker, R. 1882 A, p. 71. (Hippotherium.)
Roger, O. 1896 A, p. 176. (Hipparion.)
Trouessart, E. L. 1898 A, p. 787. (Hipparion.)
Tertiary; South Carolina.

EQUUS Linn. Type *E. caballus* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 73.
Ameghino, F. 1889 A, p. 503.
1891 A.
Auld, R. C. 1892 A.
Blake, C. C. 1863 A.
Blake, W. P. 1864 A.
Boas, J. E. 1884 A.
Boule, M. 1899 A, p. 531.
Branco, W. 1897 A, pp. 19, 67.
Burmeister, H. 1867 A, p. 238.
1875 A.
1889 A, p. 14.
Cope, E. D. 1881 G, p. 400.
1884 G, p. 9.
1884 O, p. 715.
1884 JJ, p. 40.
1887 N.
1889 C, p. 257.
1892 J, p. 125. (Tomolabis, type *E. fraternus* Leidy, part.)
1899 A, p. 256.
Cuvier, G. 1834 A, iii, p. 193, plates.
Dana, J. D. 1896 A, p. 913, fig. 1540.
Ewart, J. C. 1894 A.
1894 B.
Flower, W. H. 1881 A.
1885 A.
Flower and Lydekker 1891 A, p. 381.
Gaudry, A. 1878 B, p. 137.
Gervais, P. 1874 A.
Gray, J. E. 1869 A, p. 263.
Huxley, T. H. 1870 A, p. 439.
1870 B, p. xlix.
Leidy, J. 1869 A, p. 258.
1871 C, p. 359.
Leuthardt, F. 1891 A, p. 102.
Lydekker, R. 1882 A.
1886 A, p. 65.
Marsh, O. C. 1874 B, p. 256.
1877 E.
1879 D, p. 499.
Mojsisovics, A. 1889 A.
Nicholson and Lydekker 1889 A, p. 1361.
Owen, R, 1844 A, p. 230.
1845 B, p. 572.
1846 B, p. 383.
1866 B, p. 447, figs. 300, 303-305.
1868 A, p. 352, figs. 280-285.
Paulli, S. 1900 A, p. 190.
Pictet, F. J. 1853 A, p. 315.
Ridewood, W. G. 1895 A.
Roger, O. 1889 A.
Ryder, J. A. 1877 A.
Rütimeyer, L. 1862 A, p. 671.
Schlosser, M. 1886 A, pp. 253, 432.
Scott, W. B. 1891 B.
Steinmann and Döde9rlein 180 A, p. 783.
Struthers, J. 1885 A.
1893 B.
Trouessart, E. L. 1892 A.

Trouessart, E. L. 1898 A, p. 790.
Weithofer, A. 1888 A, p. 273.
Wheatley, C. M. 1871 A.
Wilckens, M. 1884 A.
1884 B.
1885 A.

The North American species of this genus have been greatly confused, and many of the identifications of authors are erroneous. In this work the species are accepted on the authority of Mr. J. W. Gidley, of the American Museum of Natural History, New York, who has made an exhaustive study of them. His paper appeared in the Bulletin of the Museum, vol. xiv, 1901, pp. 92-142. He is not to be held responsible for the citations that are made under the various species.

Equus caballus Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 73.
Agassiz, L. in Holmes, F. S. 1858 A. ("Horse.")
Boule, M. 1899 A, p. 531, figs. 1, 6, 9, 12, 19.
Broadhead, G. C. 1870 A. ("Horse;" species doubtful.)
Buckland, W. 1831 A, p. 595, pl. iii, figs. 14-16. ("Horse;" species doubtful.)
Cope, E. D. 1884 G, pp. 10, 11.
1887 N, p. 1072, fig. 48.
1893 A, pp. 66, 82,
Dana, J. D. 1879 A, p. 283.
Emmons, E. 1858 B, p. 196, figs. 18-21. (E. caballus; identification doubtful.)
Gidley, J. W. 1900 A, p. 111, figs. 4, 5, A.
Holmes, F. S. 1858 A. ("Horse.")
Huxley, T. H. 1872 A, p. 295.
Leidy, J. in Holmes, F. S. 1858 A. ("Horse.")
1860 B, p. 101.
1869 A, pp. 261, 399. (E. caballus, E. fossilis.)
1871 C, p. 360. (E. fossilis.)
1889 D, p. 16.
1889 E, p. 19.
Leidy, J. in Whitney, J. D. 1879 A, p. 257.
Lydekker, R. 1882 A, p. 71.
1886 A, pp. 73, 78, 80, 82, 83, 86.
Marsh, O. C. 1879 D.
Owen, R. 1845 B, p. 572, pls. cxxxvi, cxxxvii.
1868 A, p. 352, figs. 280-285.
1890 A.
Pavlow, M. 1888 A.
1890 A.
Richardson, J. 1854 A, p. 17. (E. fossilis.)
Roger, O. 1896 A, p. 180.
Swallow, G. C. 1866 A. ("Horse;" possibly not E. caballus.)
Wilckens, M. 1884 B, p. 337.
1888 A, p. 16.
Zittel, K. A. 1893 B, pp. 234, 235, figs. 169G, 170F; p. 257, fig. 202.

Pleistocene; Alaska, California, Kansas, Missouri, North Carolina, South Carolina, Canada.

Remains supposed to belong to the same species as our domestic horse have been found in various places in North America. In some cases the identifications have been open to question; in other cases the remains may have been derived from the introduced race. The former existence of the species in Alaska and in California appears well established.

Equus complicatus Leidy.

Leidy, J. 1858 C, p. 11.
Blake, C. C. 1863 A, p. 28. (E. nearcticus Blake.)
Carpenter, W. M. 1838 A, p. 202, figs. 1-3. ("Horse.")
Cooper, Wm. 1831 A, p. 207. ("Equus.")
Cooper, Smith and De Kay, 1831 A, p. 371. ("Horse.")
Cope, E. D. 1869 E, p. 176.
1869 N, p. 741.
1878 H, p. 389. (E. major.)
1882 FF, p. 922. (E. major.)
1884 G, pp. 10, 11. (E. major.)
1884 JJ, p. 41. (E. major.)
1889 F. (E. major.)
1889 S, p. 980. (E. major.)
1892 E, p. 251. (E. major,)
1892 J, p. 123. (E. major.)
1893 A, p. 83. (E. major.)
1896 H, p. 463, pl. xi, fig. 8; pl. xii. (E. intermedius.)
1899 A, pp. 255, 259. (E. complicatus, E. intermedius.)
Cragin, F. W. 1896 A, p. 53.
De Kay, J. E. 1842 C, p. 108. E. major; no description, no figures, no types.)
Gibbes, R. W. 1850 B. (E. americanus.)
1850 C. (E. americanus.)
Gidley, J. W. 1900 A, p. 114. (E. eous.)
Hay, O. P. 1899 A, p. 593. (E. eous, to replace E. intermedius.)
Holmes, F. S. 1850 A. ("Equus.")
Kindle, E. M. 1898 A, p. 485.
Leidy, J. 1847 A, p. 265, pl. ii, figs. 1, 4-6. (E. americanus, preoccupied.)
1847 C, p. 328. (E. americanus.)
1851 K, p. 140. (E. americanus.)
1853 E. (E. americanus.)
1854 I, p. 200. (E. americanus.)
1860 B, p. 100, pl. xv, figs. 2-5, 7, 9, 11-15; pl. xvi, figs. 24-26, 30, 31.
1868 A, p. 175.
1869 A, pp. 265, 399. (E. major.)
1871 A, p. 63. (E. major.)
1871 C, p. 360. (E. major.)
1871 F, p. 113.
1873 B, pp. 244, 321, pl. xxxiii, figs. 3-18.
1877 A, p. 212. (E. major.)
1884 A. (E. major.)
1889 F, p. 38, figures. (E. major.)
1890 A, p. 182. (Hippotherium princeps.)
Leidy and Lucas 1896 A, pp. viii, 49; pl. xii, figs. 12, 13. (E. major.)
Miller, G. S. 1899 B, p. 372. (E. major.)
Roger, O. 1896 A, p. 176 (Hipparion princeps); p. 178 (E. major); p. 179 (E. intermedius).
Skilton, — 1858 A. (E. major.)
Trouessart, E. L. 1898 A, p. 790. (E. major.)
Wailes, B. C. L. 1854 A, p. 286. (E. americanus.)
Wilckens, M. 1884 B, p. 337.
Williston, S. W. 1897 I, p. 303. (E. major.)
1898 I, p. 92. (E. major.)
Woodworth, J. B. 1900 B, p. 459. ("Fossil horse.")

Pleistocene; Mississippi, Missouri, South Carolina, New Jersey, Pennsylvania, New York, Massachusetts, Indiana, Illinois, Kentucky, Texas, Kansas, Louisiana, Oregon, Washington, Nevada.

Equus conversidens Owen.

Owen, R. 1869 A, p. 267.
Cope, E. D. 1884 G, p. 12.
Leidy, J. 1869 A, p. 400.
1871 C, p. 360.
Owen, R. 1870 B, pl. lxi, figs. 1, 3.
Roger, O. 1896 A, p. 179.
Trouessart, E. L. 1898 A, p. 791.
Wilckens, M. 1884 B, p. 328.
Pleistocene; Valley of Mexico.
This species is not known to occur within the limits included in this work.

Equus crenidens Cope.

Cope, E. D. 1884 G, pp. 10, 12.
1885 S, p. 1208.
1887 N, p. 1072, fig. 42.
1889 F.
1899 A, p. 255.
Cope and Wortman 1884 A, p. 40.
Felix and Lenk 1891, p. 131.
Roger, O. 1896 A, p. 178.
Trouessart, E. L. 1898 A, p. 790.
Pleistocene; Mexico.

Equus excelsus Leidy.

Leidy, J. 1858 E, p. 26.
Amer. Geologist 1892 A.
Cope, E. D. 1884 G, pp. 10, 13.
1884 JJ, p. 41.
1885 S.
1887 N, p. 1076.
1889 F.
1889 S, p. 980.
1891 J.
1892 C.
1893 A, p. 80, pl. xx, figs. 4, 5; pl. xxii, figs. 4, 5.
Dana, J. D. 1879 A, p. 233.
Dawkins, W. B. 1870 A.
Felix and Lenk 1891 A, pp. 128, 135, pl. xxx, fig. 7.
Hayden, F. V. 1858 B, p. 158.
Leidy, J. 1869 A, pp. 266, 400, pl. xix, fig. 39; pl. xxi, fig. 31.
1870 J, p. 67.
1871 C, p. 360.
1873 B, p. 242. (Syn. of E. occidentalis.)
Roger, O. 1896 A, p. 178. (Syn. of E. occidentalis.)
Trouessart, E. L. 1898 A, p. 790.
Whitney, J. D. 1879 A.
Wilckens, M. 1884 B, p. 337.
Williston, S. W. 1897 I, p. 303.
1898 I, p. 92.
Pleistocene; South Dakota, Nebraska, Texas, Mexico, Oregon?, Kansas.

Equus fraternus Leidy.

Leidy, J. 1860 B, p. 100, pl. xv, figs. 6, 8, 16–18; pl. xvi, figs. 23, 28.
Conrad, T. A. 1869 A, p. 359.
1871 A.
Cooper, Smith, and De Kay 1831 A, p. 370, in part. ("Equus.")
Cope, E. D. 1869 N, p. 741.
1884 JJ, p. 41.
1885 S, p. 1209.
1892 J, p. 125. (Tomolabis.)
Cope, E. D. 1896 H, p. 465.
1899 A, pp. 255, 257. (E. fraternus fraternus.)
Harlan, R. 1835 B, p. 267. (E. caballus.)
Hayes, Seth 1895 A.
Kindle, E. M. 1898 A, p. 485.
Leidy, J. 1847 A, p. 263, in part (E. curvidens); pl. ii, figs. 2, 3 (E. americanus).
1858 C, p. 11. (Description insufficient.)
1869 A, pp. 266, 400.
1871 A, p. 63.
1871 C, p. 360.
1877 A, p. 212.
1889 D, p. 16.
1889 F, p. 38.
1892 A.
Lucas, F. A. 1899 A, p. 764. (E. fraternus?.)
Marsh, O. C. 1874 B, p. 255.
Roger, O. 1896 A, p. 178.
Trouessart, E. L. 1898 A, p. 790.
Wilckens, M. 1884 B, p. 336.
Pleistocene; South Carolina, North Carolina, Mississippi, Georgia, Kentucky, Texas, New Jersey, Indiana, Alaska?, Pennsylvania, Louisiana.

Equus giganteus Gidley.

Gidley, J. W., 1901, Bull. Amer. Mus. Nat. Hist., xiv, p. 137, fig. 27.
Cope, E. D. 1885 S, p. 1208, pl. xxxvii, fig. 4. (E. crenidens.)
Pleistocene; Texas.

Equus occidentalis Leidy.

Leidy, J. 1865 C, p. 94.
Bowers, S. 1889 A, p. 391.
Cope, E. D. 1878 H, p. 389.
1884 G, pp, 10, 11.
1884 JJ, p. 41.
1885 S.
1887 N, p. 1076.
1889 F.
1889 S, p. 980.
1892 E, p. 252.
1893 A, pp. 66, 81.
1896 H, p. 464.
1899 A, p. 255.
Dana, J. D. 1879 A, p. 233.
Le Conte, J. 1883 A. (E. occidentalis, E. pacificus.)
Leidy, J. 1869 A, pp. 266, 400. (E. excelsus, in part.)
1873 B, pp. 239, 322, pl. xxxiii, figs. 1, 2.
Lydekker, R. 1882 A, p. 72.
Roger, O. 1896 A, p. 178.
Trouessart, E. L. 1898 A, p. 790.
Whitney, J. D. 1879 A, p. 257.
Wilckens, M. 1884 B, p. 337.
Williston, S. W. 1897 I, 303.
1898 I, p. 92.
Pleistocene; California.

Equus pacificus Leidy.

Leidy, J. 1868 D, p. 32.
Gidley, J. W., 1901, Bull. Amer. Mus. Nat. Hist. xiv, p. 116.
Le Conte, J. 1883 A.

Leidy, J. 1869 A, p. 400.
1871 C, p. 360.
1871 D, p. 50.
Pleistocene; Oregon.

Equus pectinatus Cope.

Cope, E. D. 1899 A, pp. 255, 257. (E. fraternus pectinatus.)
Pleistocene; Pennsylvania, Illinois?.

Equus scotti Gidley.

Gidley, J. W. 1900 A, p. 111, figs. 1-3, 5A.
Pleistocene (Equus beds); Texas.

Equus semiplicatus Cope.

Cope, E. D. 1893 A, p. 80, pl. xxiii, figs. 2, 3.
1889 F, p. 161. (E. fraternus, not of Leidy.)
1899 A, p. 255.
Trouessart, E. L. 1898 A, p. 791.
Pleistocene; Texas.

Equus tau Owen.

Owen, R. 1870 B, p. 565, pl. lxi, fig. 4.
Cope, E. D. 1884 G, p. 12 (E. tau); pp. 10, 15 (E. barcenæi).
1884 JJ, p. 41. (E. barcenæi.)
1885 S. (E. barcenæi.)
1889 F. (E. tau, E. barcenæi.)
1893 A, p. 79.
1899 A, p. 255.
Felix and Lenk 1891 A, pp. 127, 136, pl. xxx, figs. 6, 6*a* (E. barcenai); p. 135 (E. tau).
Leidy, J. 1869 A, p. 401.
Owen, R. 1869 A, p. 268. (No description.)
Roger, O. 1896 A, p. 178. (E. barcenæi.)
Trouessart, E. L. 1898 A, p. 790.
Wilckens, M. 1884 B, p. 329.
Pleistocene; Mexico, Texas.

Superfamily TAPIROIDEA.

Gill, T. 1872 B, p. 12 (Tapiroidea); p. 88 (Lophiodontoidea).

LOPHIODONTIDÆ.

By some authors this group is regarded as a subfamily of the Tapiridæ.

Cope, E. D. 1879 C, pp. 228, 232.
1879 V, p. 771*f*.
1881 G, pp. 378, 379, 381.
1881 O.
1884 O, pp. 614, 617.
1887 N, pp. 991, 993.
1889 C, p. 158.
Flower, W. H. 1876 B, xiii, p. 327.
1883 D, p. 428.
Flower and Lydekker 1891 A, p. 373.
Gaudry, A. 1897 A.
Gill, T. 1872 B, p. 12.
Lydekker, R. 1886 A, p. 6.
1886 D, p. 326.
Nicholson and Lydekker 1889 A, pp. 1354, 1364.
Osborn, H. F. 1893 D, p. 37.
1898 I, p. 79.
Osborn and Wortman 1892 A, p. 92 (Lophiodontidæ, Lophiodontinæ); p. 127 (Helaletidæ, Helaletinæ).
1895 A, p. 358.
Rütimeyer, L. 1888 A, p. 27.
1891 A, p. 21.
Trouessart, E. L. 1898 A, p. 760.
Woodward, A. S. 1898 B, p. 322.
Wortman, J. L. 1882 B, p. 723.
1883 A, p. 710.
1886 A, p. 478.
Wortman and Earle 1893 A, p. 173. (Helaletidæ = Helaletinæ + Colodontinæ.)
Zittel, K. A. 1893 B, p. 274. (Lophiodontinæ.)

LOPHIODON Cuv. Type *L. tapiroides* Cuv.

The following references are given to the literature of the genus *Lophiodon*, the type of its family. No American species are here recognized as belonging to this genus, although several have at times been assigned to it by authors.

Cuvier, G., 1822, Oss. Foss., ed. 2, vol. ii, pt. 1, p. 176.
Blainville, H. M. D. 1864 A, iv, Y, p. 80, plates.
Cope, E. D. 1873 E, p. 595.
1873 H, p. 212.
1881 G, p. 381.
1884 O, p. 618.
1887 N, pp. 994, 998.
Filhol, H. 1885 A.
1888 A.
Flower and Lydekker 1891 A, p. 373.
Gaudry, A. 1877 A.
1878 B, p. 63.
Gervais, P. 1859 A, p. 117.
Leidy, J. 1871 C, p. 357.
1872 B, p. 361.
1872 C, p. 19.
1873 B, p. 219.
Lydekker, R. 1886 A, p. 6.
Maack, G. A. 1865 A, p. 6.
Major, Fors. 1873 A, pp. 102, 204.
Nicholson and Lydekker 1889 A p. 1354.
Osborn, H. F. 1892 B.
1898 I, p. 87, fig. 5.
Osborn and Wortman 1892 A, p. 131.
1895 A, pp. 358, 361.
Owen, R. 1844 A, p. 224.
1845 B, p. 606.
1848 A, p. 126.
1857 C.
1858 B, p. 78.
1860 E, p. 323.
Pictet, F. J. 1853 A, p. 304.

Pomel, A. 1847 A, p. 203.
Rütimeyer, L. 1862 A.
1891 A, p. 20.
Schlosser, M. 1886 B, p. 27.
1888 A, p. 585.
Steinmann and Döderlein 1890 A, p. 771.
Wilckens, M. 1885 B, p. 209.
Wortman, J. L. 1896 A, p. 85.
Wortman and Earle 1893 A, p. 173.
Zittel, K. A. 1893 B, p. 276.

HEPTODON Cope. Type *Lophiodon ventorum* Cope.

Cope, E. D. 1882 GG.
Branco, W. 1897 A, p. 20.
Cope, E. D. 1884 O, pp. 618, 658.
1887 N, p. 994.
Earle, C. 1893 C, p. 398.
Nicholson and Lydekker 1889 A, p. 1356.
Osborn, H. F. 1892 B, p. 763.
Osborn and Wortman 1892 A, pp. 127-132.
1895 A, p. 358.
Schlosser M. 1886 B, p. 28.
Scott, W. B. 1892 A, p. 431.
Wortman, J. L. 1896 A, p. 85.
Wortman and Earle 1893 A.
Zittel, K. A. 1893 B, p. 275.

Heptodon calciculus Cope.

Cope, E. D. 1880 N, p. 747. (Lophiodon.)
1881 D, p. 197. (Pachynolophus.)
1882 GG.
1884 O, p. 656, pl. xxi*a*, fig. 6.
1887 N, p. 997, fig. 9.
Matthew, W. D. 1899 A, p. 36.
Osborn and Wortman 1892 A, p. 127, fig. 18.
Roger, O. 1896 A, p. 181.
Trouessart, E. L. 1898 A, p. 760.
Wortman, J. L. 1896 A, p. 86.
Wortman and Earle 1893 A, p. 177.
Eocene (Wind River); Wyoming.

Heptodon posticus Cope.

Cope, E. D. 1882 E, p. 187. (Pachynolophus.)
1882 GG.
1884 O, p. 654, pl. lvi, fig. 6.
Matthew, W. D. 1899 A, p. 33.
Roger, O. 1896 A, p. 181.
Trouessart, E. L. 1898 A, p. 760.
Wortman, J. L. 1896 A, p. 86.
Eocene (Wasatch); Wyoming.

Heptodon singularis Cope.

Cope, E. D. 1875 C, p. 19. (Hyrachyus.)
1877 K, p. 267, pl. lxvi, fig. 17. (Hyrachyus.)
1884 O, p. 618, fig. 31.
1887 N, p. 990, fig. 4.
Matthew, W. D. 1899 A, p. 33.
Roger, O. 1896 A, p. 181 (Heptodon); p. 185 (Hyrachyus).
Schlosser, M. 1886 B, p. 28. (Pachynolophus.)
Trouessart, E. L. 1898 A, p. 745 (Hyrachyus?); p. 761 (Heptodon?).
Wortman, J. L. 1896 A, p. 86.
Eocene (Wind River); New Mexico.

Heptodon ventorum Cope.

Cope, E. D. 1880 N, p. 747. (Lophiodon.)
1881 D, p. 197. (Pachynolophus.)
1882 E, p. 187. (Pachynolophus.)
1882 GG.
1884 O, p. 654, pl. xxix*a*, figs. 4, 5.
1887 N, p. 997, fig. 9.
Matthew, W. D. 1899 A, p. 36.
Roger, O. 1896 A, p. 180.
Trouessart, E. L. 1898 A, p. 760.
Wortman, J. L. 1896 A, p. 86.
Zittel, K. A. 1893 B, p. 275, fig. 217.
Eocene (Wind River); Wyoming.

HELALETES Marsh. Type *H. boops* Marsh.

Marsh, O. C. 1872 I, p. 218.
Cope, E. D. 1879 A, p. 43. (Syn. of Tapirulus.)
1881 G, p. 381.
1884 O, p. 618 (Helaletes); p. 698 (Desmatotherium).
1887 N, p. 994 (Helaletes, Dilophodon); p. 1000 (Desmatotherium).
Flower and Lydekker 1891 A, p. 375.
Gaudry, A. 1897 A, p. 321.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1355.
Osborn, H. F. 1890 D, p. 505.
1892 B, p. 763.
Osborn and Wortman 1892 A, pp. 82, 93, 127, 130. (Helaletes, Desmatotherium, Dilophodon.)
1895 A, p. 358, 360.
Schlosser, M. 1886 B, p. 27.
Scott, W. B. 1883 A, p. 46 (Desmatotherium, type *D. guyotii*); p. 51 (Dilophodon, type *D. minusculus*); p. 53 (Helaletes).
1892 A, p. 431.
Scott and Osborn 1883 A, p. 12. (Desmatotherium.)
1887 A, p. 260. (Desmatotherium.)
Trouessart, E. L. 1898 A, p. 761. (Helatetes.)
Wortman and Earle 1893 A.
Zittel, K. A, 1893 B, p. 275.

Helaletes boops Marsh.

Marsh, O. C. 1872 I, p. 218.
Cope, E. D. 1873 E, p. 605. (Hyrachyus.)
1873 U, p. 6. (Hyrachyus.)
1884 O, p. 661.
King, C. 1878 A, p. 404.
Matthew, W. D. 1899 A, p. 45.
Osborn and Wortman 1892 A, p. 131.
1895 A, p. 360.
Roger, O. 1896 A, p. 181.
Trouessart, E. L. 1898 A, p. 761.
Wortman and Earle 1893 A, p. 177.
Eocene (Bridger); Wyoming.

Helaletes guyotii (Scott).

Scott, W. B. 1883 A, p. 46, pl. viii. (Desmatotherium.)
Cope, E. D. 1883 II, p. 970. (Desmatotherium.)
Matthew, W. D. 1899 A, pp. 45, 49.
Osborn, H. F. 1892 B.

Roger, O. 1896 A, p. 181.
Trouessart, E. L. 1898 A, p. 761.
Eocene (Bridger); Wyoming. (Uinta); Utah.

Helaletes minusculus (Scott).

Scott, W. B. 1883 A, p. 51, pl. viii, fig. 4. (Dilophodon.)
Cope, E. D. 1883 II, p. 970. (Dilophodon.)
Matthew, W. D. 1899 A, p. 45.
Roger, O. 1896 A, p. 181.
Trouessart, E. L. 1898 A, p. 961.
Wortman and Earle 1893 A, p. 130.
Eocene (Bridger); Wyoming.

Helaletes nanus Marsh.

Marsh, O. C. 1871 D, p. 37. (Lophiodon.)
Cope, E. D. 1873 E, p. 605. (Hyrachyus.)
1873 U, p. 6. (Hyrachyus.)
1884 O, p. 661. (Hyrachyus.)
Leidy, J. 1872 B, p. 361 (Hyrachyus); p. 362 (Lophiodon.)
1872 C, p. 20. (Hyrachyus.)
1873 B, pp. 67, 327, pl. ii, fig. 14; pl. vi, fig. 42; pl. xxvi, fig. 11; pl. xxvii, figs. 21, 22. (Hyrachyus.)
Marsh, O. C. 1872 I, p. 218.
Matthew, W. D. 1899 A, p. 45.
Osborn, H. F. 1895 A, p. 505.
Osborn and Wortman 1895 A, p. 360.
Trouessart, E. L. 1898 A, p. 761. (Syn. of H. boops.)
Eocene (Bridger); Wyoming.

COLODON Marsh. Type *C. luxatus* Marsh.

Marsh, O. C. 1890 D, p. 524.
Earle, C. 1893 C, p. 393. (Colodon.)
Gaudry, A. 1897 A. (Colodon.)
Osborn, H. F. 1893 D. (Colodon.)
Osborn and Wortman 1895 A, pp. 358, 362. (Colodon.)
Scott, W. B. 1892 A, p. 430. (Mesotapirus.)
Scott and Orborn 1890 A, p. 524. (Mesotapirus, conjectural.)
Wortman, J. L. 1893 A. (Colodon.)
Wortman and Earle 1893 A, p. 173. (Colodon, Mesotapirus.)
Zittel, K. A. 1893 B, p. 275. (Colodon.)

Colodon dakotensis Osb. and Wort.

Osborn and Wortman 1895 A, p. 362, fig. 7. (Colodon.)
Hatcher, J. B. 1896 B, p. 171, pl. iii, figs. 3, 3 *a*. (Colodon.)
Matthew, W. D. 1899 A, p. 56. (Colodon.)
Trouessart, E. L. 1898 A, p. 761. (Colodon.)
Oligocene (White River); South Dakota.

Colodon longipes Osb. and Wort.

Osborn and Wortman 1894 A, p. 214. (?Mesohippus.)
Hatcher, J. B. 1896 B, p. 169. (Syn.? of Colodon occidentalis.)
Matthew, W. D. 1899 A, p. 56. (Colodon.)
Osborn and Wortman 1895 A, p. 366. (Colodon ?.)
Roger, O. 1896 A, p. 174. (Mesohippus ?.)
Trouessart, E. L. 1898 A, p. 761. (Colodon.)
Oligocene (White River); South Dakota.

Colodon luxatus Marsh.

Marsh, O. C. 1890 D, p. 524. (Colodon.)
Hatcher, J. B. 1896 B, p. 170. (Syn. of Colodon occidentalis.)
Marsh, O. C. 1893 D, p. 411, pl. x. (Colodon.)
Matthew, W. D. 1899 A, p. 56. (Colodon.)
Roger, O. 1896 A, p. 181. (Syn. of Colodon occidentalis.)
Wortman and Earle 1893 A, p. 174. (Syn. of Colodon occidentalis.)
Oligocene (White River); South Dakota.

Colodon occidentalis (Leidy).

Leidy, J. 1868 I, p. 232. (Lophiodon.)
Hatcher, J. B. 1896 B, p. 170, pl. iii, figs. 2, 6, 7. (Colodon.)
Leidy, J. 1869 A, pp. 239, 391, pl. xxi, figs. 28–30. (Lophiodon.)
1870 P, p. 112. (Lophiodon.)
1871 C, p. 357. (Lophiodon.)
1873 B, pp. 219, 327 (Lophiodon occidentalis); pl. ii, fig. 1 (Lophiodon oregonensis).
Matthew, W. D. 1899 A, pp. 56, 63. (Colodon.)
Osborn and Wortman 1895 A, pp. 362, 365. (Colodon.)
Roger, O. 1896 A, p. 181. (C. occidentalis.)
Scott and Osborn, 1890 A, p. 524.
Trouessart, E. L. 1898 A, p. 762.
Wortman and Earle 1893 A, p. 174, figs. 6, 7. (Colodon.)
Oligocene (White River); South Dakota: Miocene (John Day); Oregon.

Colodon procuspidatus Osb. and Wort.

Osborn and Wortman 1895 A, pp. 362, 364, fig. 8.
Hatcher, J. B. 1896 B, p. 170. (Syn.? of C. occidentalis.)
Matthew, W. D. 1899 A, p. 56. (Colodon.)
Trouessart, E. L. 1898 A, p. 170. (Colodon.)
Oligocene (White River); South Dakota.

TAPIRIDÆ.

Blainville, H. M. D. 1864 A, iv, Z, p. 1, pls. i–vi.
Branco, W. 1897 A, p. 19.
Cope, E. D. 1874 M.
1879 C, p. 228.
1881 G, pp. 378, 395.
1881 O.
1884 O, pp. 615, 693.
1887 N.
Cuvier, G. 1834 A, pp. 273–430, 542, with plates.
Earle, C. 1893 C.
1896 B.
Flower, W. H. 1876 B, xiii, p. 328.
Flower and Lydekker 1891 A, p. 370.
Gaudry, A. 1897 A.
Ghigi, A. 1900 A, p. 17.
Gray, J. E. 1867 A, p. 878. (Tapiridæ, Tapirinæ.)
1869 A, p. 252 (Tapiridæ); p. 253 (Tapirinæ).
Hatcher, J. B. 1896 B.

Huxley, T. H. 1872 A, p. 310.
Leidy, J. 1871 C, p. 357.
Lydekker, R. 1886 A, p. 2.
  1896 B.
Nicholson and Lydekker 1889 A, p. 1354.
Osborn, H. F. 1890 D, p. 542.
  1893 D, p. 37. (Tapiridæ, Tapirinæ; Systemodontinæ, in part.)
  1898 I, p. 79.
Osborn and Wortman 1892 A, p. 93. (Systemodontinæ, Tapirinæ.)
Owen, R. 1845 B, p. 604.
Pavlow, M. 1887 A, p. 353.
  1888 A, p. 173.
Roger, O. 1896 A, p. 180.
Rütimeyer, L. 1888 A, p. 14.
Schlosser, M. 1886 A, p. 253.
  1886 B, p. 27.
  1888 A.
Slade, D. D. 1893 A.
Steinmann and Döderlein 1890 A, p. 771.
Trouessart, E. L. 1898 A, p. 760 (Tapiridæ); p. 764 (Tapirinæ).
Woodward, A. S. 1898 B, p. 321.
Wortman and Earle 1893 A. (Tapiridæ, Tapirinæ; Systemodontinæ, in part.)
Zittel, K. A. 1893 B, p. 273 (Tapiridæ); p. 276 (Tapirinæ).

HOMOGALAX Hay. Type *Systemodon primævus* Wort.

Hay, O. P. 1899 A, p. 593.
Osborn, H. F. 1898 I, p. 87. (Systemodon.)
Trouessart, E. L. 1898 A, p. 765. (Systemodon.)
Wortman, J. L. 1896 A. (Systemodon.)

For the literature of *Systemodon*, which bears more or less on the species here included under *Homogalax*, see under *Eohippus*.

Homogalax primævus (Wort.).

Wortman, J. L. 1896 A, p. 89, fig. 3. (Systemodon.)
Hay, O. P. 1899 A, p. 593.
Matthew, W. D. 1899 A, p. 34. (Systemodon.)
Osborn and Wortman 1892 A, p. 125. (Systemodon tapirinus, in part.)
Trouessart, E. L. 1898 A, p. 765. (Systemodon.)
  Eocene (Wasatch); Wyoming.

Homogalax protapirinus (Wort.).

Wortman, J. L. 1896 A, pp. 89, 90. (Systemodon.)
Hay, O. P. 1899 A, p. 593.
Matthew, W. D. 1899 A, p. 34. (Systemodon.)
Trouessart, E. L. 1898 A, p. 765. (Systemodon.)
  Eocene (Wasatch); Wyoming.

Homogalax semihians (Cope).

Cope, E. D. 1882 A, p. 184. (Systemodon.)
  1884 O, pp. 619, 622, pl. lvi, figs. 3, 4. (Systemodon.)
Hay, O. P. 1899 A, p. 593.
Matthew, W. D. 1899 A, p. 34. (Systemodon.)
Osborn and Wortman 1892 A, pp. 124, 126. (Systemodon.)
Roger, O. 1896 A, p. 183. (Systemodon.)
Scott, W. B. 1892 A, p. 430. (Systemodon.)
Trouessart, E. L. 1898 A, p. 765. (Systemodon.)
Wortman, J. L. 1896 A, p. 89. (Systemodon.)
  Eocene (Wasatch); Wyoming.

ISECTOLOPHUS Scott and Osb. Type *I. annectens* Scott and Osb.

Scott and Osborn 1887 A, p. 260.
Cope, E. D. 1887 N, p. 994.
  1890 C, p. 470.
Earle, C. 1893 C.
Flower and Lydekker 1891 A, p. 374.
Hatcher, J. B. 1896 B, p. 177.
Nicholson and Lydekker 1889 A, p. 1355.
Osborn, H. F. 1890 D, p. 518.
  1892 B, p. 764.
Osborn, Scott, and Speir 1878 A, p. 54, part. (Helaletes.)
Scott, W. B. 1892 A, p. 430.
Wortman and Earle 1893 A.
Zittel, K. A. 1893 B, p. 277.

Isectolophus annectens Scott and Osb.

Scott and Osborn 1887 A, p. 260.
Hatcher, J. B. 1896 B, p. 177.
Matthew, W. D. 1899 A, p. 49.
Osborn, H. F. 1890 D, p. 520, pl. x.
  1892 B, p. 764.
  1895 A, p. 98.
Roger, O. 1896 A, p. 183.
Trouessart, E. L. 1898 A, p. 765.
Wortman and Earle 1893 A, p. 171.
  Eocene (Uinta); Wyoming.

Isectolophus latidens Scott and Osb.

Osborn, Scott, and Spier 1878 A, p. 54. (Helaletes.)
Hatcher, J. B. 1896 B, p. 177.
Matthew, W. D. 1899 A, p. 45.
Osborn, H. F. 1890 D, p. 519.
Trouessart, E. L. 1898 A, p. 765.
Wortman and Earle 1893 A, p. 170.
  Eocene (Bridger); Wyoming.

PROTAPIRUS Filhol. Type *P. priscus* Filhol=P. filholi Troues.

Filhol, H. 1877 A, p. 131.
Cope, E. D. 1887 N, pp. 994, 996.
Earle, C. 1893 C.
  1896 B, p. 934.
Filhol, H. 1885 A, p 1.
Gaudry, A. 1897 A, p. 320.
Hatcher, J. B. 1896 B.
Wortman, J. L. 1893 A.
Wortman and Earle 1893 A, p. 161
Zittel, K. A. 1893 B, p. 278.

Protapirus obliquidens Wort. and Earle.

Wortman and Earle 1893 A, p. 162, figs. 1-4.
Earle, C. 1893 C, p. 395.
Hatcher, J. B. 1896 B, p. 162.

Matthew, W. D. 1899 A, p. 56.
Roger, O. 1896 A, p. 183.
Trouessart, E. L. 1898 A, p. 766.
Oligocene (White River); South Dakota.

Protapirus simplex Wort. and Earle.

Wortman and Earle 1893 A, p. 168, fig. 1, A.
Earle, C. 1893 C, p. 394.
Hatcher, J. B. 1896 B, p. 168, pl. iii, figs. 5, 5a.
Matthew, W. D. 1899 A, p. 56.
Roger, O. 1896 A, p. 183.
Trouessart, E. L. 1898 A, p. 766.
Oligocene (White River); South Dakota.

Protapirus validus Hatcher.

Hatcher, J. B. 1896 B, p. 162, pl. ii, figs. 1-4; text figs. 1, 2.
Earle, C. 1896 B, p. 934.
Matthew, W. D. 1899 A, p. 56.
Roger, O. 1896 A, p. 183.
Trouessart, E. L. 1898 A, p. 766.
Oligocene (White River); South Dakota.

TAPIRAVUS Marsh. Type *T. validus* Marsh.

Marsh, O. C. 1877 D, p. 252.
Cope, E. D. 1887 N, pp. 996, 1007.
Earle, C. 1893 C, p. 345.
Hatcher, J. B. 1896 B, p. 178.
Marsh, O. C. 1877 E.
Scott, W. B. 1883 A, p. 50.
Zittel, K. A. 1893 B, p. 278.
Matthew, W. D. 1899 A, p. 71.
Roger, O. 1896 A, p. 183.
Trouessart, E. L. 1898 A, p. 766.
"Pliocene"; Rocky Mountain region.

Tapiravus rarus Marsh.

Marsh, O. C. 1877 D, p. 252.
King, C. 1878 A, p. 430.

Tapiravus validus Marsh.

Marsh, O. C. 1871 F. (Lophiodon.)
Hatcher, J. B. 1896 B, p. 178.
Marsh, O. C. 1877 D, p. 252.
Trouessart, E. L. 1898 A, p. 766.
Miocene; New Jersey.

TANYOPS Marsh. Type *T. undans* Marsh.

Marsh, O. C. 1894 M, p. 348.

Tanyops undans Marsh.

Marsh, O. C. 1894 M, p. 348.
Miocene; South Dakota.

TAPIRUS Brisson. Type *Hippopotamus terrestris* Linn.

Brisson, 1762, Regnum Anim., p. 176. (*Fide* C. H. Merriam.)
Blainville, H. M. D. 1864 A, iv, Z, p. 1, plates.
Branco, W. 1897 A, p. 20.
Cope, E. D. 1873 E, p. 594.
1873 H, p. 212.
1881 G, p. 395.
1887 N, p. 1007.
1889 C, p. 254.
Cope and Wortman 1884 A, p. 26.
Cuvier, G. 1834 A, iii, pp. 273-430, with plates.
Döderlein, L. 1878 A.
Earle, C. 1893 A.
1893 C.
Flower and Lydekker 1891 A, p. 370.
Ghigi, A. 1900 A, p. 17.
Gray, J. E. 1867 A, p. 879.
1869 A, p. 254.
Hatcher, J. B. 1896 A, p. 173.
Huxley, T. H. 1872 A, p. 311.
Kowalevsky, W. 1873 A, pp. 218, 222.
Leuthardt, F. 1891 A, p. 113.
Lydekker, R. 1886 A, p. 3.
Meyer, H. 1867 A.
Nicholson and Lydekker 1889 A, p. 1354.
Owen, R. 1845 B, p. 604.
1866 B, p. 444, figs. 299, 301.
1868 A, p. 357.
Paulli, S. 1900 A, p. 182.
Pictet, F. J. 1853 A, p. 301.
Rütimeyer, L. 1862 A.
Scott, W. B. 1892 A, p. 431.
Trouessart, E. L. 1898 A, p. 767.
Wortman and Earle 1893 A.
Zittel, K. A. 1893 B, p. 278.

Tapirus haysii Leidy.

Leidy, J. 1860 B, p. 106, pl. xvii, figs. 4, 7-10.
Cope, E. D. 1869 E, p. 176, pl. iii, fig. 6.
1869 J.
1871 I, p. 95.
1895 F, p. 447.
1895 G, p. 597.
1899 A, p. 253.
Cope and Wortman 1884 A, p. 26.
Hays, I. 1852 A. ("Tapir.")
Leidy, J. 1852 G. (No description.)
1852 I. (No description.)
1860 B, p. 106, pl. xvii, figs. 4, 7-10.
1873 B, p. 391.
Meyer, H. 1867 A, p. 169.
Roger, O. 1896 A, p. 184.
Trouessart, E. L. 1898 A, p. 769. [T. (Elasmognathus).]
Wailes, B. C. L. 1854 A, p. 286.
Pleistocene; South Carolina, Mississippi, Virginia, Pennsylvania, Indiana.

Tapirus terrestris (Linn.).

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 74. (Hippopotamus.)
Unless otherwise indicated, the following authors call the species *T. americanus*.
Blake, W. P. 1868 A. ("Tapir.")
Carpenter, W. M. 1846 A, p. 247, figs. 3, 4. ("Tapir.")
Cope, E. D. 1871 I, p. 95.
Cope and Wortman 1884 A, p. 26. (T. terrestris.)
Earle, C. 1893 A.
Ghigi, A. 1900 A, p. 22.
Gray, J. E. 1867 A, p. 879. (T. terrestris.)

Hatcher, J. B. 1896 B, p. 174.
Holmes, F. S. 1858 B.
1859 A, p. 183.
Kindle, E. M. 1898 A, p. 485. (T. terrestris?.)
Leidy, J. 1849 A.
1860 B, p. 106, pl. xvii, figs. 1–3, 6, 11, 12.
1869 A, p. 391.
1884 B.
1889 B.
1889 E, p. 19.
1892 A.
Roger, O. 1896 A, p. 185.
Wailes, B. C. L. 1854 A, App., p. 285.
Wheatley, C. M. 1871 A. ("Tapir.")
Whitney, J. D. 1879 A, p. 250.

Pleistocene; Virginia, Illinois, California, Texas, Louisiana, Kentucky, Mississippi, Indiana, Ohio, South Carolina.

Prof. E. D. Cope (1899 A, p. 253) refers all specimens of fossil *Tapirus* found in the United States to *T. haysii*.

Superfamily BRONTOTHERIOIDEA.

Osborn, H. F. 1898 I, p. 79. (Titanotheroidea.)

BRONTOTHERIIDÆ.

Marsh, O. C. 1873 H, p. 486. (Brontotheridæ.)
Brandt, J. F. 1878 A, pp. 10, 19. (Brontotherinæ.)
Cope, E. D. 1881 G, pp. 378, 379, 397. (Menodontidæ.)
1884 O, pp. 615, 713. (Menodontidæ.)
1887 L, p. 926. (Menodontidæ.)
1887 N. (Menodontidæ.)
1889 C, p. 158. (Menodontidæ.)
1898 B, p. 135. (Menodontidæ.)
Earle, C. 1892 C, p. 273. (Titanotheriidæ.)
Flower, W. H. 1876 B, xiii, p. 327. (Titanotheridæ.)
1876 C, p. 109. (Titanotheriidæ.)
Flower and Lydekker 1891 A, p. 413. (Titanotheriidæ.)
Gervais, P. 1876 B. (Brontotherides.)
Hatcher, J. B. 1893 B, p. 216. (Titanotheriidæ.)
Lydekker, R. 1896 B, pp. 170, 377. (Titanotheriidæ.)
Marsh, O. C. 1874 A, p. 66. (Brontotheridæ.)
1874 D, p. 81. (Brontotheridæ.)
1875 B, p. 245. (Brontotheridæ.)
1876 C. (Brontotheridæ.)
1876 G, p. 60. (Brontotheridæ.)
1877 E. (Brontotheridæ.)
Marsh, O. C. 1884 F, p. 190. (Brontotheridæ.)
1887 B, p. 336. (Brontotheridæ.)
1889 A, p. 163. (Brontotheridæ.)
1889 H. (Brontotheridæ.)
1895 D, p. 498. (Brontotheridæ.)
1897 D, p. 166. (Brontotheridæ.)
Nature 1874 A.
Nicholson and Lydekker 1889 A, p. 1374. (Titanotheriidæ.)
Osborn, H. F. 1890 D, p. 514. (Titanotheriidæ.)
1893 D. (Titanotheriidæ.)
1897 D. (Titanotheriidæ.)
1898 I, p. 79. (Titanotheriidæ.)
1900 C, p. 570. ("Titanotheres.")
Osborn and Wortman 1892 A, p. 93. (Titanotheriidæ.)
Roger, O. 1896 A, p. 192. (Titanotheridæ.)
Schlosser, M. 1886 B, p. 31. (Menodontidæ.)
1888 A, p. 588. ("Brontotherien.")
Scott and Osborn 1887 B, p. 157. (Menodontidæ.)
Steinman and Döderlein 1890 A, p. 777. (Brontotheridæ.)
Woodward, A. S. 1898 B, p. 329. (Titanotheriidæ.)
Zittel, K. A. 1893 B, p. 298. (Titanotheriidæ.)

LAMBDOTHERIINÆ.

Earle, C. 1892 C, p. 274. (Palæosyopinæ.)
Flower and Lydekker 1891 A, p. 413. (Lambdotheriidæ.)
Nicholson and Lydekker 1889 A, p. 1371. (Lambdotheriidæ.)
Osborn, H. F. 1893 D, p. 37.
Osborn and Wortman 1892 A, p. 93.
Roger, O. 1896 A, p. 192.
Steinmann and Döderlein 1890 A, p. 777.
Trouessart, E. L. 1898 A, p. 737.
Zittel, K. A. 1893 B, p. 300.

LAMBDOTHERIUM Cope. Type *L. popoagicum* Cope.

Cope, E. D. 1880 N, p. 746.
1881 G, p. 396.
1884 O, pp. 694, 709.
1887 N.
Earle, C. 1892 C.
Flower and Lydekker 1891 A, p. 413.
Nicholson and Lydekker 1889 A, p. 1372.
Osborn, H. F. 1897 A.
1897 D.
Schlosser, M. 1886 B, p. 19.
1887 A, p. 576.
Scott, W. B. 1892 A, p. 432.
Wortman, J. L. 1883 A, p. 710.
1886 A, p. 480.
Zittel, K. A. 1893 B, p. 300.

Lambdotherium popoagicum Cope.

Cope, E. D. 1880 N, p. 746.
1881 D, p. 196.
1884 O, pp. 710, pl. xxixa, fig. 7; pl. lviii, figs. 3–5.
1887 N, p. 1060, figs. 24, 26.
1887 S, p. 275, pl. vii, figs. 5, 6.
Matthew, W. D. 1899 A, p. 36.
Osborn, H. F. 1897 A.
1897 G, p. 256.
Roger, O. 1896 A, p. 192.
Trouessart, E. L. 1898 A, p. 737.

Eocene (Wind River); Wyoming, Colorado.

LIMNOHYOPS Marsh. Type *L. laticeps* Marsh.

Marsh, O. C. 1890 D, p. 525.
Cary, A. 1892 A.
Cope, E. D. 1873 E, p. 593. (Limnohyus.)
1881 G, p. 396. (Limnohyus.)
1884 O, pp. 697, 705. (Limnohyus.)
1887 N, p. 1061. (Limnohyus.)
Earle, C. 1891 B, p. 113.
1892 C, pp. 270, 276, 350.
Leidy, J. 1872 H, p. 241. (Limnohyus, type *L. laticeps*, not Limnohyus Marsh.)
1873 B, pp. 57, 323. (Limnohyus.)
Marsh, O. C. 1872 G, p. 124. (Palæosyops, type *P. laticeps*, not Palæosyops Leidy, 1870.)
Matthew, W. D. 1899 A, p. 47. (Syn. of Palæosyops.)
Osborn, Scott, and Speir 1878 A, p. 41. (Limnohyus.)
Schlosser, M. 1886 B, p. 18. (Limnohyus.)
Zittel, K. A. 1893 B, p. 303.

Limnohyops fontinalis (Cope).

Cope, E. D. 1873 B, p. 35. (Palæosyops.)
1873 E, p. 594. (Limnohyus.)
1884 O, p. 707, pl. xlix, fig. 9; pl. l, fig. 4; pl. lviii*a*, figs. 4, 5. (Limnohyus.)
Earle, C. 1891 B, p. 115.
1892 C, p. 368.
Matthew, W. D. 1899 A, p. 47. (Palæosyops.)
Roger, O. 1896 A, p. 193.
Trouessart, E. L. 1898 A, p. 738.
Eocene (Bridger); Wyoming.

Limnohyops laticeps Marsh.

Marsh, O. C. 1872 G, p. 122. (Palæosyops.)
Cope, E. D. 1884 O, p. 707. (Limnohyus.)
Earle, C. 1891 B, p. 114.
1892 C, pp. 269, 351, pl. xi, figs. 8, 9; pl. xii, figs. 24–27; pl. xiv, figs. 39–42; p. 330, pl. xii, figs. 14–16; pl. xiv, figs. 43, 44. (Palæosyops minor, not of Marsh.)
Leidy, J. 1873 B, pp. 28–45 (in part); pl. iv, figs. 3–6; pl. v, figs. 10, 11; pl. xxiv, figs. 6, 7 (Palæosyops paludosus); pp. 58, 326, pl. xxiii, fig. 13 (Limnohyus).
Marsh, O. C. 1884 F, fig. 68. (Palæosyops.)
1890 D, p. 525.
Matthew, W. D. 1897 A, p. 57. (Palæosyops.)
1899 A, p. 47. (Palæosyops.)
Osborn, Scott, and Speir 1878 A, p. 42. (Limnohyus.)
Roger, O. 1896 A, p. 193.
Trouessart, E. L. 1898 A, p. 738.
Eocene (Bridger); Wyoming.

PALÆOSYOPS Leidy. Type *P. paludosus* Leidy.

Leidy, J. 1870 Q, p. 113.
Cope, E. D. 1873 E, p. 591.
1881 G, p. 396.
1884 O, pp. 694, 697.
1887 N, p. 1061.
1892 R.
Earle, C. 1891 B.
1892 C.
1895 A.
Flower, W. H. 1876 B, xiii, p. 327.
Hatcher, J. B. 1895 A, p. 1090. (Manteoceras, type *M. vallidens*=P. manteoceras Osb., not P. vallidens Cope.
Leidy, J. 1871 C, p. 354.
1871 G.
1872 B, p. 358.
1872 H, p. 241.
1873 B, p. 27, pl. xxxi, fig. 1.
Marsh, O. C. 1872 G, p. 124. (Limnohyus, type *L. robustus*.)
1877 E. (Limnohyus.)
Matthew, W. D. 1897 A.
Nicholson and Lydekker 1889 A, p. 1372.
Osborn, H. F. 1883 A, p. 31.
1890 D, pp. 513, 553.
1895 A, p. 87. (Manteoceras=Telmatherium.)
1897 D.
Osborn, Scott, and Speir 1878 A, p. 27.
Osborn and Wortman 1892 A, p. 132.
Schlosser, M. 1886 B, p. 18.
Scott, W. B. 1886 A, p. 307.
1891 B, p. 371 seq.
1892 A, p. 432.
Steinmann and Döderlein 1890 A, p. 777.
Woodward, A. S. 1898 B, p. 332.
Zittel, K. A. 1893 B, p. 301.

Palæosyops humilis Leidy.

Leidy, J. 1872 G.
1872 A.
1872 H, p. 242. (Limnohyus.)
1873 B, pp. 58, 326, pl. xxiv, fig. 8.
Matthew, W. D. 1899 A, p. 47.
Roger, O. 1896 A, p. 193.
Trouessart, E. L. 1898 A, p. 739.
Eocene (Bridger); Wyoming.

Palæosyops junior Leidy.

Leidy, J. 1872 J, p. 277.
1873 B, pp. 57, 326.
Matthew, W. D. 1899 A, p. 47.
Roger, O. 1896 A, p. 193.
Trouessart, E. L. 1898 A, p. 739.
Eocene (Bridger); Wyoming.
Probably belongs to *P. paludosus.*

Palæosyops lævidens Cope.

Cope, E. D. 1873 E, p. 591. (Limnohyus.)
1884 O, pp. 699, 701, pl. l, figs. 1–3.
Earle, C. 1892 C, p. 317.
Leidy, J. 1872 B, p. 359. (P. paludosus, *fide* Cope.)
Matthew, W. D. 1899 A, p. 47. (Syn. of P. laticeps.)
Roger, O. 1896 A, p. 192.
Trouessart, E. L. 1898 A, p. 738.
Eocene (Bridger); Wyoming.

Palæosyops longirostris Earle.

Earle, C. 1892 C, p. 338.
Matthew, W. D. 1899 A, p. 47. (Syn.? of Telmatotherium megarhinum.)
Roger, O. 1896 A, p. 193.
Trouessart, E. L. 1898 A, p. 739.
Eocene (Bridger); Wyoming.

Palæosyops paludosus Leidy.

Leidy, J. 1870 Q, p. 113.
Cope, E. D. 1873 B, p. 35. (P. lævidens.)
1873 E, pp. 592, 593. (P. major, Limnohyus paludosus, L. diaconus.)
1873 U, p. 4. (P. diaconus sp. nov.)
1884 O, p. 105 (P. paludosus); pp. 698, 699, 701, pl. li. fig. 2; pl. lii, figs. 1, 2 (P. major); p. 706, pl. li, fig. 3 (L. diaconus).
1887 N, p. 1062, fig. 27. (P. major.)
Earle, C. 1891 B, p. 115. (L. diaconus, invalid.)
1892 C, p. 279, pl. x, fig. 1; pl. xii, figs. 17-23; pl. xiii; pl. xiv, figs. 45-49, and text figures.
1895 A, p. 624.
King, C. 1878 A, p. 404.
Leidy, J. 1871 B, p. 373. (P. major.)
1871 C, p. 355.
1871 I.
1871 K, P. 229. (P. major; orig. description.)
1872 B, pp. 359, 365. (P. major.)
1872 G, p. 168.
Leidy, J. 1872 H, p. 241. (P. major.)
1873 B, pp. 28, 325, pl. iv, figs. 1; 2, 7, 8; pl. v, figs. 4-11; pl. xix, figs. 1-4; pl. xx, figs. 1-7; pl. xxiii, figs. 3-6; pl. xxiv, figs, 6, 7; pl. xxix, fig. 5 (P. paludosus); pp. 45, 326, pl. xx, fig. 8; pl. xxiii, figs. 1, 2, 7-12, 14-16; pl. xxiv, figs. 1-5 (P. major).
1873 E, p. 592. (P. major.)
L. P. B. 1885 A, p. 191, fig. 24. (P. robustus.)
Marsh, O. C. 1872 G, pp. 122, 124 (P. paludosus); p. 124 (P. robustus sp. nov.).
1885 B, fig. 105. (P. robustus.)
1885 F, fig. 69. (P. robustus.)
Matthew, W. D. 1897 A, p. 57.
1899 A, p. 46.
Osborn, H. F. 1898 Q, p. 11.
Osborn, Scott, and Speir 1878 A, p. 27, pl. ii, figs. 1-13; pl. iii, fig. 8; pl. v (P. major); p. 34, pl. i; pl. iii, figs. 1-9 (P. paludosus.)
Roger, O. 1896 A, p. 192 (P. paludosus); p. 193 (Limnohyops diaconus).
Trouessart, E. L. 1898 A, p. 738. (P. paludosus, Limnohyops diaconus.)
Zittel, K. A. 1893 B, p. 301, fig. 242 (P. major); p. 302, fig. 244 (P. paludosus).
Eocene (Bridger); Wyoming.

Palæosyops ultimus Matth.

Matthew, W. D. 1897 A, p. 57. (No description.)
1899 A, p. 50. (No description.)
Eocene (Uinta); Utah.

TELMATHERIUM Marsh. Type *T. validum* Marsh.

Marsh, O. C. 1872 G, p. 123.
Cope, E. D. 1879 W, p. 33. (Leurocephalus.)
1881 G, p. 396. (Leurocephalus.)
1884 O, p. 694. (Leurocephalus.)
1887 N, p. 1061. (Leurocephalus.)
Earle, C. 1891 B, p. 115. (Telmatotherium.)
1892 C, pp. 269, 341. (Telmatotherium.)
1895 A, p. 627. (Telmatotherium.)
Hatcher, J. B. 1895 A. (Telmatotherium.)
Leidy, J. 1873 B, p. 323. (Syn. of Palæosyops.)
Marsh, O. C. 1880 H, p. 10. (Telmatotherium.)
Osborn, H. F. 1895 A, p. 82. (Telmatotherium.)
1897 D. (Telmatotherium.)
Osborn, Scott, and Speir 1878 A, p. 42. (Leurocephalus, type L. *cultridens*.)
Scott, W. B. 1892 A, p. 432.
Zittel, K. A. 1893 B, p. 303. (Telmatotherium.)

Telmatherium boreale (Cope).

Cope, E. D. 1880 N, p. 746. (Palæosyops.)
1881 D, p. 196 (Palæosyops); p. 196 (Lambdotherium brownianum).
1884 O, pp. 699, 703, pl. lviii, fig. 3 (Palæosyops); p. 709, pl. lvi*a*, fig. 10 (Lambdotherium brownianium).
Earle, C. 1892 C, pp. 319, 384. (Palæosyops.)
Matthew, W. D. 1897 A, p. 57. (Palæosyops.)
1899 A, p. 36. (Telmatotherium.)
Osborn, H. F. 1897 D.
Osborn and Wortman 1892 A, p. 132, fig. 19. (Palæosyops.)
Roger, O. 1896 A, p. 193. (Palæosyops borealis, Lambdotherium brownianum.
Trouessart, E. L. 1898 A, p. 737 (Lambdotherium brownianium); p. 738 (Palæosyops).
Eocene (Wind River); Wyoming.

Telmatherium cultridens (Scott and Osb.).

Osborn, Scott, and Speir 1878 A, p. 42, pl. iv. (Leurocephalus.)
Earle, C. 1891 B, p. 116. (Telmatotherium.)
1892 C, pp. 269, 343, pl. x, fig. 3; pl. xii, figs. 12, 13. (Telmatotherium.)
Matthew, W. D. 1897 A, p. 58. (Telmatotherium.)
1899 A, p. 47. (Telmatotherium.)
Osborn, H. F. 1895 A, pp. 83, 95. (Telmatotherium.)
Osborn and Wortman 1892 A, p. 134. (Telmatotherium.)
Roger, O. 1896 A, p. 193.
Trouessart, E. L. 1898 A, p. 739. (Telmatotherium.)
Eocene (Bridger); Wyoming.

Telmatherium diploconum Osborn.

Osborn, H. F. 1895 A, p. 85, fig. 6. (Telmatotherium.)
Matthew, W. D. 1899 A, p. 50. (Variety minus.)
Roger, O, 1896 A, p. 193.
Trouessart, E. L. 1898 A, p. 740. (Telmatotherium.)
Eocene (Uinta); Utah.

Telmatherium hyognathum (Scott and Osb.).

Scott and Osborn 1890 A, p. 513. (Palæosyops.)
Earle, C. 1891 B, p. 116. (Palæosyops.)
1892 C, p. 348, pl. x, figs. 10, 11. (Telmatotherium.)
Matthew, W. D. 1897 A, p, 57. (Telmatotherium.)
1899 A, p. 47 (Syn. of T. validum); p. 50 (Telmatotherium hyognathum).
Osborn, H. F. 1895 A, pp. 83, 87. (Telmatotherium.)
Roger, O. 1896 A, p. 193.
Trouessart, E. L. 1898 A, p. 740. (Telmatotherium.)
Eocene (Bridger); Wyoming: (Uinta); Utah.

Telmatherium megarhinum (Earle).

Earle, C. 1891 A, p. 45. (Palæosyops.)
1891 B, p. 117. (Palæosyops.)
1892 C, p. 321, pl. x, fig. 2; pl. xi, figs. 4–7 (Palæosyops megarhinum); p. 330, pl. xii, figs. 14–16; pl. xiv, figs. 43, 44 (P. minor, *fide* Wortman *in litt.*).
1895 A, p. 623. (Palæosyops.)
Leidy, J. 1873 B, pp. 28–45, in part; pl. iv, figs. 3–6; pl. v, figs. 10, 11; pl. xxiv, figs. 6, 7. (Palæosyops paludosus, *fide* Earle.)
Matthew, W. D. 1899 A, p. 47. (Telmatotherium.)
Osborn, H. F. 1895 A, pp. 83, 84. (Telmatotherium.)
Roger, O. 1896 A, p. 193.
Trouessart, E. L. 1898 A, p. 738, in part (Palæosyops minor); p. 739 (P. megarhinum).
Eocene (Bridger); Wyoming.

Telmatherium validum Marsh.

Marsh, O. C. 1872 G, p. 123.
Cope, E. D. 1884 O, p. 699, in part; pl. li, fig. 1. (Palæosyops vallidens.)
Earle, C. 1891 B, p. 116. (Telmatotherium.)
1892 C, p. 342. (Telmatotherium.)
Matthew, W. D. 1899 A, p. 47. (Telmatotherium.)
Osborn, H. F. 1895 A, pp. 82, 94. (Telmatotherium.)
Osborn, Scott, and Speir 1878 A, p. 40. (Palæosyops vallidens.)
Roger, O. 1896 A, p. 193. (T. validum, T. vallidens.)
Trouessart, E. L. 1898 A, p. 739. (Telmatotherium.)
Eocene (Bridger); Wyoming.

Telmatherium vallidens (Cope).

Cope, E. D. 1872 S, p. 487. (Palæosyops.)
1873 E, p. 592. (Palæosyops.)
1884 O, p. 699, pl. lii, fig. 3; pl. liii, fig. 1 (Palæosyops.)
Earle, C. 1892 C, p. 316. (Palæosyops.)
Matthew, W. D. 1899 A, p. 47. (Telmatotherium.)
Trouessart, E. L. 1898 A, p. 739.
Eocene (Bridger); Wyoming.

Dolichorhinus Hatcher. Type *Telmatotherium cornutum* Osb.

Hatcher, J. B. 1895 A, p. 1090.
Trouessart, E. L. 1898 A, p. 740.

Dolichorhinus cornutus (Osb.).

Osborn, H. F. 1895 A, p. 90, figs. 10, 11. (Telmatotherium.)
Hatcher, J. B. 1895 A, p. 1090.
Matthew, W. D. 1897 A, p. 58. (Telmatotherium.)
1899 A, p. 50. (Telmatotherium.)
Roger, O. 1896 A, p. 193. (Telmatotherium.)
Trouessart, E. L. 1898 A, p. 740.
Eocene (Uinta); Utah.

Manteoceras Hatcher. Type *Palæosyops manteoceras* Osb.

Hatcher, J. B. 1895 A, p. 1090.

Manteoceras manteoceras (Osb.).

Osborn, H. F. in Matthew, W. D. 1899 A, p. 47. (Palæosyops.)
Hatcher, J. B. 1895 A, p. 1089, pl. xxxix, fig. 2 (Telmatotherium vallidens, not of Cope); p. 1090 (made type of Manteoceras.)
Matthew, W. D. 1899 A, pp. 47, 50. (Palæosyops.)
Osborn, H. F. 1895 A, pp. 83, 87, figs. 7–9. (Telmatotherium vallidens, not of Cope.)
Eocene (Bridger); Wyoming. (Uinta); Utah.

Diplacodon Marsh. Type *D. elatus* Marsh.

Marsh, O. C. 1875 B, p. 246.
Cope, E. D. 1881 G, p. 397.
1884 O, p. 713.
1887 N, p. 1063.
1890 C, p. 470.
Earle, C. 1892 C.
Hatcher, J. B. 1895 A. (Diplacodon, Protitanotherium.)
Marsh, O. C. 1884 F, p. 172.
1889 A, p. 165.
Matthew, W. D. 1897 A, p. 58.
Nicholson and Lydekker 1889 A, p. 1374.
Osborn, H. F. 1890 D, pp. 512, 553.
1897 D.
Schlosser, M. 1886 B, p. 19.
Scott, W. B. 1891 B, p. 371 *et seq.*
1892 A, p. 432.
Scott and Osborn 1887 A, p. 263.
Steinmann and Döderlein 1890 A, p. 777.
Zittel, K. A. 1893 B, p. 303.

Diplacodon elatus Marsh.

Marsh, O. C. 1875 B, p. 246.
King, C. 1878 A, p. 407.
Marsh, O. C. 1889 H.
Matthew, W. D. 1899 A, p. 50.
Osborn, H. F. 1890 D, p. 514, pls. viii, ix.
Roger, O. 1896 A, p. 193.

Scott and Osborn 1887 A, p. 262.
Trouessart, E. L. 1898 A, p. 740.
Eocene (Uinta); Utah.

Diplacodon emarginatus Hatcher.

Hatcher, J. B. 1895 A, p. 1085, pl. xxxviii, figs. 1-4.
Matthew, W. D. 1899 A, p. 50.
Trouessart, E. L. 1898 A, p. 740.
Eocene (Uinta); Utah.
Hatcher, as cited, has proposed for this species, under certain contingencies, the new generic name *Protitanotherium*.

DÆODON Cope. Type *D. shoshonensis* Cope.

Cope, E. D. 1879 D, p. 77.
1881 G, p. 397.
1884 O, p. 713.
1887 N, p. 1063.
Roger, O. 1896 A, p. 194. (Syn. of Titanotherium.)
Trouessart, E. L. 1898 A, p. 740. (Syn. of Titanotherium.)
Zittel, K. A. 1893 B, p. 304. (Daledon; syn. of Titanotherium.)

Dæodon shoshonensis Cope.

Cope, E. D. 1879 D, p. 77.
1879 B, p. 58.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 194. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 740. (Titanotherium.)
Miocene (John Day); Oregon.

BRONTOTHERIINÆ.[1]

Brandt, J. F. 1878 A, pp. 10, 19. (Brontotherinæ.)
Earle, C. 1892 C, p. 274. (Titanotherinæ.)
Osborn, H. F. 1893 D. (Titanotherinæ.)
1900 F, p. 94. ("Titanotheres.")
Osborn and Wortman 1892 A, p. 93. (Titanotheriinæ.)
Roger, O. 1896 A, p. 194. (Titanotherinæ.)
Zittel, K. A. 1893 B, p. 304. (Titanotherinæ.)

MEGACEROPS Leidy. Type *M. coloradensis* Leidy.

Leidy, J. 1870 D, p. 2.
Cope, E. D. 1873 E, pp. 564, 585. (Megaceratops.)
1873 F, p. 66. (Megaceratops.)
1873 K, p. 102. (Megaceratops.)
1873 CC, p. 14. (Megaceratops.)
1887 N, p. 1063. (Syn. of Menodus.)
1889 I, p. 153. (Haplacodon, type *Menodus angustigenis* Cope.)
1891 A, p. 9. (Menodus, in part.)
Earle, C. 1892 C, p. 296. (Haplacodon.)
Leidy, J. 1871 C, p. 352. (Megacerops.)
1873 B, pp. 239, 335.
1874 B. (Syn. of Titanotherium.)
Marsh, O. C. 1873 F, p. 295.
1874 A.
1875 B, p. 245.
1876 C, p. 338.
1887 B, p. 331. (Allops, type *A. serotinus.*)
1889 A, p. 165. (Allops, Megacerops.)
1890 D, p. 523. (Diploclonus, type *D. amplus.*)
Nicholson and Lydekker 1889 A, p. 1374.
Osborn, H. F. 1890 D, pp. 513, 542. (Syn. of Titanotherium.)
1896 B. (Titanotherium, in part.)
Scott and Osborn 1887 A, pp. 255, 262. (Menodus, in part.)
1887 B, p. 157. (Syn. of Menodus.)
Trouessart, E. L. 1898 A, p. 740. (Syn. of Titanotherium.)

Megacerops? amplus (Marsh).

Marsh, O. C. 1890 D, p. 523. (Diploclonus.)
Osborn, H. F. 1896 B, pp. 192, 193. (Titanotherium.)
Roger, O. 1896 A, p. 195. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 742. (Syn. of Titanotherium montanum.)
Oligocene (White River); South Dakota.

Megacerops angustigenis (Cope).

Cope, E. D. 1886 U, p. 81. (Menodus.)
Ami, H. M. 1891 A. (Menodus.)
Cope, E. D. 1887 N, p. 1067. (Menodus.)
1889 I, p. 153. (Type of Haplacodon.)
1889 O, p. 628. (Menodus syceras.)
1891 A, p. 13, pl. v, figs. 1, 2; pl. vi, fig. 2; pl. vii, fig. 1; pl. xi, fig. 1?; pl. xii, fig. 4?; pl. xiii, figs. 1?, 4?, 6?, 8? (Menodus angustigenis); p. 18, pl. vii, fig. 2?; pl. viii, fig. 4? (M. syceras).
Matthew, W. D. 1899 A, p. 58. (Titanotherium.)
Osborn, H. F. 1896 B, p. 184 (Titanotherium angustigenis); pp. 178, 193 (T. syceras, a syn.? of T. acer).
Roger, O. 1896 A, p. 194 (Titanotherium syceras); p. 195 (T. angustigenis).
Trouessart, E. L. 1898 A, p. 741 (Titanotherium angustigenis); p. 743 (T. syceras, a syn. of T. acer).
Oligocene (White River); Swift Current Creek, Canada.

Megacerops coloradensis Leidy.

Leidy, J. 1870 D.
Cope, E. D. 1873 E, p. 585. (Megaceratops coloradoensis.)

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[1] In the arrangement of the genera and species of the Brontotheriinæ the writer has had the benefit of the conclusions arrived at by Prof. H. F. Osborn, at the date of going to press, in his studies in the preparation of his forthcoming monograph of the Titanotheres.

Cope, E. D. 1873 F, p. 66. (Megaceratops coloradoensis.)
1887 N, p. 1063. (Megaceratops coloradoensis.)
?1891 A, p. 9 (Menodus coloradoensis); p. 10, pl. vi, fig. 1; pl. viii, figs. 1–3; pl. ix, figs. 2, 3; pl. x, fig. 2; pl. xii, fig. 1; pl. xiii, figs. 5, 7 (Menodus? americanus); p. 10, pl. ix, fig. 1; pl. x, fig. 3; pl. xii, figs. 2, 3c; pl. xiii, fig. 3 (Menodus? proutii).
Leidy, J. 1871 C, p. 352.
1873 B, pp. 239, 335, pl. i, figs. 2, 3; pl. ii, fig. 2.
Marsh, O. C. 1873 F, p. 296.
1874 A, p. 81.
1897 C, p. 527.
Matthew, W. D. 1899 A, p. 57. (Titanotherium.)
Osborn, H. F. 1890 D, p. 15, p. 513. (Titanotherium.)
1896 B, p. 171, text figure; p. 175, pl. iii. (Titanotherium.)
Roger, O. 1896 A, p. 194. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 741. (Titanotherium.)
Oligocene (White River); South Dakota.

Megacerops? crassicornis (Marsh).

Marsh, O. C. 1891 E, p. 268. (Allops.)
Oligocene (White River); South Dakota.

Megacerops dispar (Marsh).

Marsh, O. C. 1887 B, p. 328, figs. 7, 8; not figs. 5, 6. (Brontops.)
1891 E, p. 269. (Brontops validus.)
Osborn, H. F. 1896 B, p. 188. (Titanotherium.)
Roger, O. 1896 A, p. 195. (Titanotherium.)
Scott and Osborn 1887 B, p. 158, text figs. 3^1, 5^1, 6^1. (Menodus coloradensis.)
Trouessart, E. L. 1898 A, p. 742. (Titanotherium.)
Zittel K. A. 1893 B, p. 307, figs. 249, 250. (Titanotherium.)
Oligocene (White River); South Dakota.

Megacerops? serotinus (Marsh).

Marsh, O. C. 1887 B, p. 331. (Allops.)
Cope, E. D. 1887 L, p. 926. (Menodus.)
Osborn, H. F. 1896 B, p. 192. (Titanotherium.)
Roger, O. 1896 A, p. 195. (Titanotherium.)
Oligocene (White River); South Dakota.

BRONTOTHERIUM Marsh. Type *B. gigas* Marsh.

Marsh, O. C. 1873 H, p. 486.
Cope, E. D. 1873 S, p. 2. (Miobasileus, type *M. ophryas.*)
1873 DD. (Miobasileus.)
1874 A, p. 108. (Miobasileus.)
1887 L, p. 926. ("Brontops.")
1887 N, p. 1063. (Syn. of Menodus.)
1891 A, p. 9. (Menodus, in part.)
Flower, W. H. 1876 B, xiii, p. 327.
Flower and Lydekker 1891 A, p. 413. (Syn. of Titanotherium.)
Leidy, J. 1874 B. (Syn. of Titanotherium.)
Marsh, O. C. 1874 A, p. 81.
1874 D, p. 66.
1875 B, p. 245.
1876 C, p. 334. (Brontotherium.)
1887 B, p. 326 (Brontops, type *B. robustus*): p. 330 (Titanops, type *T. curtus*).
1889 A, p. 163 (Brontops); p. 165 (Titanops).
1889 H. (Brontops.)
Nature 1874 A.
Osborn, H. F. 1896 B, p. 175. (Titanotherium, in part.)
Schlosser, M. 1886 A, p. 253.
Scott and Osborn 1887 A, p. 262. (Menodus, in part.)
1887 B, p. 157. (Syn. of Menodus.)
Trouessart, E. L. 1898 A, p. 740. (Syn. of Titanotherium.)
Woodward, A. S. 1898 B, p. 330 (Titanotherium, in part); p. 332 (Brontotherium).

Brontotherium bucco (Cope.)

Cope, E. D. 1873 CC, p. 11. (Symborodon.)
1873 DD. (Symborodon.)
1874 B, p. 485, in part. (Symborodon.)
1874 G, p. 89. (Symborodon.)
Cope, E. D. 1887 N, p. 1063. (Symborodon.)
Roger, O. 1896 A, p. 195. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 742. (Titanotherium.)
Oligocene (White River); Colorado.

Brontotherium curtum (Marsh.)

Marsh, O. C. 1887 B, p. 330, fig. 11. (Titanops.)
Cope, E. D. 1887 L, p. 926. (Syn. of Menodus platyceras.)
1891 D, p. 48. (Menodus peltoceras.)
Marsh, O. C. 1897 C, p. 522, fig. 94. (Titanops.)
Matthew, W. D. 1899 A, p. 58. (Titanotherium curtum, T. peltoceras.)
Osborn, H. F. 1896 B, p. 189, pl. iv. (Titanotherium.)
Roger, O. 1896 A, p. 194 (Titanotherium curtum, a syn. of T. platyceras); p. 195 (T. peltoceras).
Trouessart, E. L. 1898 A, p. 741 (Titanotherium peltoceras); p. 743 (T. curtum, a syn. of T. platyceras).
Oligocene (White River); Colorado, South Dakota.

Brontotherium dolichoceras (Scott and Osb.).

Scott and Osborn 1887 B, p. 160, text figs. 3^2, 5^2, 6^2. (Menodus.)
Cope, E. D. 1887 N, p. 1063. (Menodus.)
Matthew, W. D. 1899 A, p. 58. (Titanotherium.)
Osborn, H. F. 1896 B, p. 185, pl. iv; text fig. p. 169. (Titanotherium.)
Osborn and Wortman 1895 A, p. 349. (Titanotherium.)
Roger, O. 1896 A, p. 194. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 742. (Titanotherium.)
Oligocene (White River); South Dakota.

Brontotherium gigas Marsh.

Marsh, O. C. 1873 H, p. 486.
King, C. 1878 A, p. 412.
Marsh, O. C. 1876 C, pl. xii.
1887 B, p. 330, fig. 12. (Titanops elatus.)
1897 C, p. 527.
Matthew, W. D. 1899 A, p. 58. (Titanotherium elatum.)
Osborn, H. F. 1896 B, p. 175 (Titanotherium gigas); p. 171, text figure (T. elatum); p. 189, pl. iv (T. elatum).
1896 C, pp. 709, 714, illust. 5. (Titanotherium elatum.)
1898 Q, p. 17. (Titanotherium elatum.)
Osborn and Wortman 1895 A, p. 349. (Titanotherium elatum.
Roger, O. 1896 A, p. 194. (Titanotherium gigas.)
Trouessart, E. L. 1898 A, p. 742. (Titanotherium gigas; T. elatum, a subsp. of T. montanum.)
Oligocene (White River); Colorado, South Dakota.

Brontotherium hypoceras (Cope).

Cope, E. D. 1874 B, p. 491. (Symborodon.)
Osborn, H. F. 1896 B, p. 183. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 742. (Syn.? of T. ingens.)
Oligocene (White River); Colorado.

Brontotherium medium (Marsh).

Marsh, O. C. 1891 E, p. 269. (Titanops.)
Oligocene (White River); South Dakota.

Brontotherium? ophryas (Cope).

Cope, E. D. 1873 S, p. 3. (Miobasileus.)
1873 CC, p. 14. (Miobasileus.)
1874 A, p. 108. (Miobasileus.)
1874 B, p. 490. (Symborodon.)
Osborn, H. F. 1896 B, p. 177. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 743. (Titanotherium.)
Oligocene (White River); Colorado.

Brontotherium platyceras (Scott and Osb.).

Scott and Osborn 1887 B, p. 160, text fig. 4. (Menodus.)
Cope, E. D. 1887 L, p. 926. (Menodus.)
1887 N, p. 1063. (Menodus.)
1891 A, p. 9. (Menodus.)
Matthew, W. D. 1899 A, p. 58. (Titanotherium.)
Osborn, H. F. 1896 B, pp. 167, 185, pl. iv, text figs. 7, 7*a*, and p. 167. (Titanotherium.)
Roger, O. 1896 A, p. 194. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 743. (Titanotherium.)
Zittel, K. A. 1893 B, p. 309, fig. 251. (Titanotherium.)
Oligocene (White River); South Dakota.

Brontotherium ramosum (Osborn).

Osborn, H. F. 1896 B, pp. 167, 194, pl. iv, figures; text fig. 13. (Titanotherium.)
Matthew, W. D. 1899 A, p. 58. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 743. (Titanotherium.)
Oligocene (White River); South Dakota.

Brontotherium robustum (Marsh).

Marsh, O. C. 1887 B, p. 326. (Brontops.)
Hatcher, J. B. 1893 B, p. 212. (Titanotherium.)
Hutchinson, H. N. 1893 A, p. 160, pl. xv. (Titanotherium.)
Marsh, O. C. 1889 A, p. 163, pl. vi. (Brontops.)
1889 H, p. 706. (Brontops.)
1897 C, pl. xxix. (Brontops.)
Matthew, W. D. 1899 A, p. 58. (Titanotherium.)
Osborn, H. F. 1896 A, p. 162. (Titanotherium.)
1896 B, p. 187, text fig. 8. (Titanotherium.)
Osborn and Wortman 1895 A, p. 346, pls. viii, ix; text figs. 1–3. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 742. (Titanotherium.)
Woodward, A. S. 1898 B, p. 331, fig. 190. (Titanotherium.)
Zittel, K. A. 1893 B, p. 306, fig. 247. (Titanotherium.)
Oligocene (White River); Nebraska, Colorado.

Brontotherium? selwynianum (Cope).

Cope, E. D. 1889 D, p. 628. (Menodus.)
Ami, H. M. 1891 A. (Menodus.)
Cope, E. D. 1891 A, p. 17, pl. v, figs. 3–3*b*. (Menodus.)
Matthew, W. D. 1899 A, p. 58. (Titanotherium.)
Osborn, H. F. 1896 B, p. 193. (Titanotherium selwynianus.)
Roger, O. 1896 A, p. 194. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 741. (Titanotherium.)
Oligocene (White River); Swift Current Creek, Canada.

Brontotherium tichoceras (Scott and Osb.).

Scott and Osborn 1887 A, p. 159, text figs. 3^2, 5^2, 6^2. (Menodus.)
Cope, E. D. 1887 N, p. 1063. (Menodus.)
1891 A, p. 9. (Menodus tichoceras, M. altirostris.)
Matthew, W. D. 1899 A, p. 58. (Titanotherium.)
Osborn, H. F. 1896 B, p. 184, pl. iii, figures; and p. 169. (Titanotherium.)
Roger, O. 1896 A, p. 195. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 742. (Titanotherium.)
Oligocene (White River); South Dakota.

TITANOTHERIUM Leidy. Type *Palæotherium? proutii* Owen, Norw., Evans.

Leidy, J. 1852 J, p. 552.
Cary, A. 1892 A, p. 309, pl. xviii, fig. 2.
Cope, E. D. 1873 E, pp. 564, 585.
1874 G, p. 90.
1874 K, p. 224.
1881 G, p. 397. (Menodus.)
1884 O, p. 713. (Menodus.)
1887 L, p. 926. (Menodus.)
1887 N, p. 1063. (Menodus.)
1891 A, p. 8. (Menodus.)
Flower, W. H. 1876 B, xiii, p. 327.
1876 C, p. 115.

Flower and Lydekker 1891 A, p. 413. (Titanotherium, in part.)
Gaudry, A. 1878 B, p. 163.
Green, F. V. 1853 A.
Hatcher, J. B. 1893 B.
Hay, O. P. 1899 A, p. 594. (Menodus.)
Leidy, J. 1850 C, p. 122. (Palæotherium.)
1851 A. (Palæotherium.)
1852 A. (Rhinoceros.)
1853 D, p. 392. (Titanotherium; Eotherium, type *E. americanum.*)
1854 A, pp. 72, 114.
1856 H, p. 92.
1869 A, p. 207.
1871 C, p. 352.
1874 B.
1874 C.
Lydekker, R. 1896 B, pp. 170, 377.
Marsh, O. C. 1873 H, p. 486. (Titanotherium; Menodus preoccupied.)
1874 A.
1875 B, p. 245.
1876 C, p. 338. (Menodus.)
1884 F, p. 225. (Menodus.)
1887 B, p. 328. (Menops, type *M. varians.*)
1889 A, p. 165. (Menops.)
Nature 1874 A.
Nicholson and Lydekker 1889 A, p. 1374. (Titanotherium, in part.)
Osborn, H. F. 1890 D, pp. 513, 542. (Titanotherium, in part.)
1896 A.
1896 B. (Titanotherium, in part.)
?Pomel, A. 1849, Biblioth. Univ. Genève, x, p. 75. (Menodus.)
Prout, H. A. 1860 A. (Leidyotherium.)
Rütimeyer, L. 1862 A, p. 571.
Schlosser, M. 1886 A, p. 253. (Titanotherium, Menodus.)
1886 B, p. 19.
Scott, W. B. 1891 A, p. 371. (Titanotherium, in part.)
1892 A, p. 432. (Titanotherium, in part.)
Scott and Osborn 1887 A, p. 262. (Menodus.)
1887 B, p. 158. (Menodus.)
Steinmann and Döderlein 1890 A, p. 778. (Menodus.)

Titanotherium heloceras (Cope).

Cope, E. D. 1873 S, p. 4. (Megaceratops helocerus, *err. typ.*)
1873 CC, p. 14. (Symborodon.)
1873 DD. (Symborodon heloceros.)
1874 A, p. 109. (Symborodon.)
1874 B, pp. 484, 487. (Symborodon.)
1887 N, p. 1063. (Symborodon.)
Hatcher, J. B. 1893 B, p. 219, fig. 3.
Matthew, W. D. 1899 A, p. 58.
Osborn, H. F, 1896 B, p. 179, pl. iii; text fig. p. 171.
Trouessart, E. L. 1898 A, p. 741.
Oligocene (White River); Colorado.

Titanotherium ingens (Marsh).

Marsh, O. C. 1874 A, p. 85, pls. i, iv. (Brontotherium.)
Cope, E. D. 1874 Q. (Syn. of Symborodon trigonoceras.)
1887 N, p. 1063. (Menodus.)
1891 A, p. 91. (Syn. of Menodus americanus.)
Gaudry, A. 1878 B, p. 75, fig. 87. (Brontotherium.)
Hatcher, J. B. 1893 B, p. 219, fig. 2.
King, C. 1878 A, p. 411. (Brontotherium.)
Marsh, O. C. 1876 C, pls. x–xiii, and text figs. 1, 2. (Brontotherium.)
1884 F, figs. 64, 160, 161. (Brontotherium.)
1885 B, figs. 101, 130, 131. (Brontotherium.)
1897 C, p. 522, fig. 93. (Brontotherium.)
Matthew, W. D. 1899 A, p. 58.
Nature 1874 A, figs. 1, 2. (Brontotherium.)
Osborn, H. F. 1896 B, p. 182, text fig. p. 171.
Scott and Osborn 1887 B, p. 158. (Syn. of Menodus coloradensis.)
Trouessart, E. L. 1898 A, p. 742.
Zittel, K. A. 1893 B, p. 304, fig. 245.
Oligocene (White River); Colorado, South Dakota.

Titanotherium proutii (Owen, Norw., and Evans).

Owen, Norwood, and Evans 1850 A, p. 66. (Palæotherium?.)
Ami, H. M. 1891 A. (Menodus americanus, M. proutii.)
Cope, E. D. 1874 K.
?1887 N, p. 1063, pl. xxxii. (Menodus giganteus.)
Hayden, F. V. 1858 B, p. 157.
Leidy, J. 1850 C, p. 122. (Palæotherium.)
1851 A. (Palæotherium.)
1852 A, p. 2. (Rhinoceros americanus.)
1852 J, p. 551, pl. ix, figs. 8, 3*a*?; pl. xii *b*, figs. 3, 4, 6 (Palæotherium proutii); explan. pl. xii *b* (P. maximum).
1852 L, p. 64. (Palæotherium.)
1853 D, p. 392. (T. proutii; Eotherium americanum.)
1854 A, pp. 72, 114, pl. xvi; pl. xvii, figs. 1–10 (T. proutii); pp. 78, 114, pl. xvii, figs. 11–13 (Palæotherium giganteum).
1854 E, p. 157.
1856 H, p. 92.
1869 A, pp. 206, 389, pl. xxiv. (T. prouti.)
1871 C, p. 354.
1874 B.
1874 C.
Marsh, O. C. 1870 D.
1873 H, p. 486.
1874 A, p. 81.
1874 H, p. 486. (T. prouti.)
1876 C, p. 138.
Osborn, H. F. 1896 B, p. 158. (T. proutii, T. maximum, T. americanum.)
Osborn and Wortman 1895 A, p. 34, fig. 2.
Pictet, F. J. 1853 A, p. 311. (Palæotherium.)
Prout, H. A. 1846 A, fig. 1. ("Palæotherium.")
1847 A, figs. 1, 2. (Palæotherium?)
Roger, O. 1896 A, p. 194. (T. proutii, T. americanum.)
Scott and Osborn 1887 B, p. 163.
Trouessart, E. L. 1898 A, p. 741. (T. proutii, T. americanum.)

Zittel, K. A. 1893 B, p. 305, fig. 246.
Oligocene (White River); South Dakota?.

References of specimens to this species by writers since the original description may or may not be correct. More than one species may be included.

Titanotherium trigonoceras (Cope).

Cope, E. D. 1873 CC, p. 13. (Symborodon.)
1874 B, p. 488. (Symborodon.)
1874 G, pp. 89, 90. (Symborodon trigonoceros.)
1874 P, p. 28. (Symborodon.)
1874 Q, p. 2. (Symborodon.)
1887 L, p. 926. (Menops varians=Menodus trigonoceras.)
Cope, E. D. 1887 N, p. 1065, figs. 29, 30, 31?. (Symborodon.)
1889 C, p. 259, fig. 81. (Symborodon,)
1891 A, p. 9. (Symborodon.)
Marsh, O. C. 1887 B, p. 328, fig. 9; not fig. 10. (Menops varians.)
Matthew, W. D. 1899 A, p. 58.
Osborn, H. F. 1896 B, p. 180, pl. iii, text figs. 501 and 6355 on p. 167; not text figs. 5, 6 (T. trigonoceras); p. 189, pl. iii (T. varians).
Scott and Osborn 1887 B, p. 158. (Syn. of Menodus coloradensis.)
Trouessart, E. L. 1898 A, p. 741. (T. trigonoceras.)
Oligocene (White River); Colorado, South Dakota.

SYMBORODON Cope. Type *S. torvus* Cope.

Cope, E. D. 1873 S, p. 2.
1873 DD.
1874 A, p. 108.
1874 B, p. 480.
1874 G, p. 90.
1874 K, p. 224.
1881 G, p. 397.
1884 O, p. 713.
1887 L, p. 926.
1887 N, p. 1063.
1887 S.
1889 C.
1891 A, p. 9.
Flower, W. H. 1876 B, xiii, p. 327.
Flower and Lydekker 1891 A, p. 413. (Syn. of Titanotherium.)
Leidy, J. 1874 B. (Syn. of Titanotherium.)
Marsh, O. C. 1874 A, p. 81. (Syn. of Brontotherium.)
1875 B, p. 246. (Anisacodon, type *A. montanus.*)
1876 C, p. 338 (Megacerops, part; Brontotherium, part); p. 339 (Diconodon, to replace Anisacodon Marsh, 1875; preoccupied by Marsh, 1872).
Nicholson and Lydekker 1898 A, p. 1374. (Syn.? of Titanotherium.)
Osborn, H. F. 1890 D, p. 513. (Titanotherium, in part.)
1896 B. (Titanotherium, in part.)
Scott and Osborn 1887 B, p. 157. (Syn.? of Menodus.)
Steinmann and Döderlein 1890 A, p. 778.
Trouessart, E. L. 1898 A, p. 740. (Syn. of Titanotherium.)

Symborodon acer Cope.

Cope, E. D. 1873 S. p. 4. (Megaceratops.)
1873 CC, p. 12 (S. altirostris); p. 13 (S. acer).
1873 DD. (S. acer, S. altirostris.)
1874 A, p. 109.
1874 B, p. 486, pls. v, vi; pl. viii, fig. 1 (S. altirostris); p. 488, pl. vii; pl. viii, fig. 3 (S. acer).
1874 G, p. 89. (S. acer, S. altirostris.)
1887 N, p. 1064, fig. 28; pl. xxxiv, fig. 3 (S. acer); pl. xxxiii, fig. *a*; pl. xxxiv, fig. 1 (S. altirostris).
Cope, E. D. 1891 A, p. 9. (S. acer, S. altirostris.)
Hatcher, J. B. 1893 B, p. 219, fig. 1. (Titanotherium.)
Matthew, W. D. 1899 A, p. 58. (Titanotherium.)
Osborn, H. F. 1896 B, pp. 178, 179, pl. iv, and text figs. 3 A, 4. (Titanotherium.)
Roger, O. 1896 A, p. 195. (Titanotherium acer, T. altirostris.)
Trouessart, E. L. 1898 A, p. 743.
Oligocene (White River); Colorado, Nebraska, South Dakota, Canada.

Symborodon montanus (Marsh).

Marsh, O. C. 1875 B, p. 246. (Anisacodon.)
King, C. 1878 A, p. 412. (Diconodon.)
Marsh, O. C. 1876 C, p. 339. (Diconodon.)
Matthew, W. D. 1899 A, p. 58. (Titanotherium.)
Osborn, H. F. 1896 B, p. 183. (Titanotherium.)
Roger, O. 1896 A, p. 195. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 742. (Titanotherium.)
Oligocene (White River); South Dakota.

Symborodon torvus Cope.

Cope, E. D. 1873 S, p. 2. (S. torrus, *errore typog.*)
1873 CC, p. 14.
1874 A, p. 108.
1874 B, p. 485, pl. ii, fig. 1; pls. iii, iv; pl. viii, fig. 2. (S. bucco.)
1874 G.
1887 N, p. 1063, pl. xxxiii, fig. *b*; pl. xxxiv, fig. 2. (S. bucco.)
1891 A, pp. 9, 11. (S. bucco, S. proutii.)
Matthew, W. D. 1899 A, p. 58. (Titanotherium.)
Osborn, H. F. 1896 B, p. 176, pl. iii; not text figs. 2, 3 (Titanotherium torvum); pp. 167, figure; p. 179, pl. iii (T. bucco).
1898 Q, p. 9. (Menodus.)
Roger, O. 1896 A, p. 195. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 742. (Syn. of Titanotherium bucco.)
Woodward, A. S. 1898 B, p. 331, fig. 190. (Menodus.)
Oligocene (White River); Colorado, South Dakota, Nebraska.

TELEODUS Marsh. Type *T. avus* Marsh.

Marsh, O. C. 1890 D, p. 524.
Hatcher, J. B. 1893 B, p. 217.
Osborn, H. F. 1896 B, p. 175 (Syn.? of Diplacodon); p. 194 (Syn.? of Titanotherium).
Zittel, K. A, 1893 B, pp. 304, 308. (Syn. of Titanotherium.)

Teleodus avus Marsh.

Marsh, O. C. 1890 D, p. 524.
Matthew, W. D. 1899 A, p. 57. (Titanotherium.)
Osborn, H. F. 1896 B, p. 194. (Titanotherium avum.)
Roger, O. 1896 A, p. 194. (Titanotherium.)
Trouessart, E. L. 1898 A, p. 740. (Diplacodon.)
Oligocene (White River); South Dakota.

Superfamily RHINOCEROTOIDEA.

Gill, T. 1872 B, pp. 12, 85, 87.
Osborn, H. F. 1898 I, pp. 79, 80.

HYRACODONTIDÆ.

Branco, W. 1897 A, p. 20.
Cope, E. D. 1879 C, p. 228.
    1879 V, p. 771 *a*.
    1881 G, pp. 378, 393.
    1881 O.
    1884 O, pp. 615, 691.
    1887 K.
    1887 N.
Osborn, H. F. 1893 D, p. 37.
    1898 I, pp. 79, 80, 94.
Osborn, H. F. 1900 C, p. 570.
Osborn and Wortman 1895 A, p. 367.
Roger, O. 1896 A, p. 185.
Scott and Osborn 1883 A, p. 17. ("Hyracodon series.")
Steinmann and Döderlein 1890 A, p. 772. (Hyracodontinæ.)
Trouessart, E. L. 1898 A, p. 744. (Hyracodontinæ.)
Zittel, K. A. 1893 B, p. 284. (Subfamily.)

HYRACHYINÆ.

Osborn, H. F. 1893 D, p. 40.
    1898 I, p. 85.
Osborn and Wortman 1892 A, p. 93.

HYRACHYUS Leidy. Type *H. agrarius* Leidy.

Leidy, J. 1871 K, p. 229.
Brandt, J. F. 1878 A, p. 24.
Cope, E. D. 1873 E, p. 594.
    1873 H.
    1881 G, p. 381.
    1883 H, p. 969.
    1884 O, pp. 618, 657.
    1887 N, p. 994.
    1889 C.
Earle, C. 1892 C, p. 329.
Filhol, H. 1885 A.
    1888 A, p. 180.
Flower, W. H. 1876 B, xiii, p. 327.
Flower and Lydekker 1891 A, p. 373.
Gaudry, A. 1877 A.
    1878 B, p. 65.
    1897 A, p. 320.
Leidy, J. 1871 C, p. 357.
    1872 B, p. 360.
    1872 C, p. 19.
    1873 B, pp. 59, 327.
Marsh, O. C. 1875 B, p. 244.
    1877 E.
Nicholson and Lydekker 1889 A, p. 1355.
Osborn, H. F. 1890 D, p. 505.
    1898 I, p. 87, fig. 5.
Osborn, Scott, and Speir 1878 A, p. 49.
Osborn and Wortman 1892 A, p. 129.
Pavlow, M. 1888 A, p. 177.
    1892 A.
Rütimeyer, L. 1891 A, p. 28.
Schlosser, M. 1886 B, p. 23.
Scott, W. B. 1883 A, p. 49.
    1896 B.
Scott and Osborn 1883 A, p. 11.
    1887 A, p. 261.
Steinmann and Döderlein 1890 A, p. 771.
Trouessart, E. L. 1898 A, p. 744.
Wortman and Earle 1893 A.
Zittel, K. A. 1893 B, p. 284.

Hyrachyus affinis (Marsh).

Marsh, O. C. 1871 D, p. 37. (Lophiodon.)
Leidy, J. 1872 B, p. 362. Lophiodon.)
    1872 C, p. 20. (Lophiodon.)
Eocene (Bridger); Wyoming.
This species is referred to the genus *Hyrachyus* with doubt.

Hyrachyus agrarius Leidy.

Leidy, J. 1871 K, p. 229.
Cope, E. D. 1873 E, p. 605.
    1873 U, p. 6. (H. implicatus, specimen 1.)
    1884 O, pp. 660, 675.
    1887 N, p. 997, pl. xxxi, text fig. 10. (H. agrestis.)
    1889 C, p. 257, fig. 80. (H. agrestis.)
King, C. 1878 A, p. 404. (H. agrarius, H. bairdianus.)
Leidy, J. 1871 B, p. 373.
    1871 C, p. 357. (H. agrarius, H. agrestis.)
    1871 K, p. 229.

Leidy, J. 1872 B, p. 361.
1872 C, p. 19.
1873 B, pp. 60, 327, pl. ii, figs. 11, 12; pl. iv, figs. 9–18; pl. xx, figs. 25, 26.
Marsh, O. C. 1871 D, p. 36. (Lophiodon bairdianus.)
1884 F, p. 64, fig. 71. (H. bairdianus.)
Matthew, W. D. 1899 A, p. 46.
Osborn, H. F. 1890 D, p. 505.
1892 B, p. 764.
1896 I, p. 81, fig. 1; p. 88, fig. 6; p. 89, fig. 8; p. 128, fig. 33.
1898 Q, p. 9.
Osborn, Scott, and Speir 1878 A, p. 49.
Osborn and Wortman 1895 A, p. 367, figs. 9–11.
Pavlow, M. 1892 A.
Roger, O. 1896 A, p. 185.
Trouessart. E. L. 1898 A, p. 744.
Eocene (Bridger); Wyoming, Utah.

Hyrachyus eximius Leidy.

Leidy, J. 1871 K, p. 229.
Cope, E. D. 1873 E, p. 595.
1873 H, p. 218.
1884 O, pp. 660, 662, pl. xxiii*a*, fig. 1; pl. liii, fig. 3; pls. liv. lv, lv*a*; pl. lviii*a*, figs. 5, 6.
Leidy, J. 1871 B, p. 373.
1872 B, p. 361.
1873 B, pp. 66, 327, pl. iv, figs. 19, 20; pl. xix, fig. 5; pl. xxvi, figs. 9, 10.
Matthew, W. D. 1899 A, p. 46.
Osborn, H. F. 1892 I, p. 764.
Osborn, Scott, and Speir 1878 A, pp. 49, 52.
Pavlow, M. 1892 A, p. 171.
Roger, O, 1896 A, p. 185.
Trouessart, E. L. 1898 A, p. 744.
Zittel, K. A. 1893 B, p. 284, figs. 224, 225.
Eocene (Bridger); Wyoming.

Hyrachyus imperialis Osb., Scott, and Speir.

Osborn, Scott, and Speir 1878 A, p. 50.
Cope, E. D. 1884 O, p. 660.
Matthew, W. D. 1899 A, p. 46.
Trouessart, E. L. 1898 A, p. 744.
Eocene (Bridger); Wyoming.

Hyrachyus implicatus Cope.

Cope, E. D. 1873 U, p. 5, specimen 2.
1873 E, p. 604.
1884 O, pp. 660, 675, 676, pl. lviii, figs. 6, 7 (H. implicatus); p. 660 (H. intermedius).
Matthew, W. D. 1899 A, p. 46.
Osborn, Scott, and Speir 1878 A, p. 51 (H. implicatus); p. 52 (H. intermedius, not of Filhol); p. 52 (H. crassidens).
Roger, O. 1896 A, p. 185.
Trouessart, E. L. 1898 A, p. 744. (H. implicatus, H. intermedius.)
Eocene (Bridger); Wyoming.

Hyrachyus modestus Leidy.

Leidy, J. 1870 O, p. 109. (Lophiodon.)
Cope, E. D. 1884 O, p. 660.
Leidy, J. 1871 C, p. 357. (Lophiodon.)
1872 B, p. 361.
1872 C, p. 20.
1873 B, pp. 67, 367, pl. ii, figs. 11, 13.
Matthew, W. D. 1899 A, p. 46.
Roger, O. 1896 A, p. 185.
Trouessart, E. L. 1898 A, p. 744.
Eocene (Bridger); Wyoming.

Hyrachyus paradoxus Osb., Scott, and Speir.

Osborn, Scott, and Speir 1878 A, pp. 53, 135.
Matthew, W. D. 1899 A, p. 46.
Eocene (Bridger); Wyoming.

Hyrachyus princeps Marsh.

Marsh, O. C. 1872 G, p. 125.
Cope, E. D. 1873 E, p. 595.
1873 U, p. 6.
1884 O, pp. 660, 661, pl. lii, fig. 4
Matthew, W. D. 1899 A, p. 46.
Roger, O. 1896 A, p. 185.
Trouessart, E. L. 1898 A, p. 744.
Eocene (Bridger); Wyoming.

COLONOCERAS Marsh. Type *C. agrestis* Marsh.

Marsh, O. C. 1873 H, p. 407.
Brandt, J. F. 1878 A, p. 25.
Cope, E. D. 1879 C, p. 233.
1881 G, p. 381.
1884 O, p. 618.
1887 N, p. 994.
Marsh, O. C. 1877 E.
1884 F, fig. 10.
1897 D, p. 166.
Nicholson and Lydekker 1889 A, p. 1356.
Osborn, H. F. 1890 D, p. 505.
1893 D.
Scott, W. B. 1883 A, p. 53.
Scott and Osborn 1883 A, p. 20.
Zittel, K. A. 1893 B, p. 285.

Colonoceras agrestis Marsh.

Marsh, O. C. 1873 H, p. 407.
1897 D, p. 167, fig. 2.
Matthew, W. D. 1899 A, p. 46.
Roger, O. 1896 A, p. 185.
Trouessart, E. L. 1898 A, p. 745.
Eocene (Bridger); Wyoming.

TRIPLOPODINÆ.

Cope, E. D. 1881 G, pp. 378, 382. (Triplopodidæ.)
1881 O. (Triplopodidæ.)
1884 O, p. 615. (Triplopidæ.)
1887 N, pp. 992, 993. (Triplopodidæ.)
Nicholson and Lydekker 1889 A, p. 1356. (Triplopodidæ.)
Osborn, H. F. 1898 I, p. 85.
Osborn and Wortman 1892 A, p. 93.

Triplopus Cope. Type *T. cubitalis* Cope.

Cope, E. D. 1880 I.
1880 M.
1881 G, p. 382.
1884 O, p. 678.
1890 C, p. 472.
Nicholson and Lydekker 1889 A, pp. 1355, 1356. (Prothyracodon.)
Osborn, H. F. 1890 D, p. 524.
Schlosser, M. 1886 B, p. 23.
Scott, W. B. 1883 A, p. 53.
Scott and Osborn 1883 A, p. 12.
1887 A, p. 260. (Prothyracodon, type *P. intermedium*=T. obliquidens.)
Zittel, K. A. 1893 B, p. 285.

Triplopus amarorum Cope.

Cope, E. D. 1881 G, p. 389.
1884 O, pp. 660, 687, pl. lv, figs. 6–9; pl. lviii, fig. 2.
Matthew, W. D. 1899 A, p. 46.
Osborn, H. F. 1897 A, p. 57.
Roger, O. 1896 A, p. 185.
Trouessart, E. L. 1898 A, p. 745.
Eocene (Bridger); Wyoming.

Triplopus cubitalis Cope.

Cope, E. D. 1880 I.
1881 G, p. 383.
1884 O, p. 687, pls. lv*a*, figs. 10–12; pl. lvi*a*.
1887 N, p. 999, fig. 13.
Matthew, W. D. 1899 A, p. 46.
Osborn, H. F. 1890 D, p. 528.
Roger, O. 1896 A, p. 185.
Scott, W. B. 1896 B, p. 367.
Trouessart, E. L. 1898 A. p. 745.
Eocene (Bridger); Wyoming.

Triplopus obliquidens (Scott and Osb.).

Scott and Osborn 1887 A, p. 259. (Hyrachyus.)
Matthew, W. D. 1899 A, p. 49.
Osborn, H. F. 1890 D, p. 525, pl. xi, figs. 6–10.
Roger, O. 1896 A, p. 185.
Scott and Osborn 1887 A, p. 260. (Prothyracodon intermedium.)
Trouessart, E. L. 1898 A, p. 745.
Eocene (Bridger); Wyoming: (Uinta); Utah.

Anchisodon Cope. Type *A. quadriplicatus* Cope.

Cope, E. D. 1879 L, p. 270.
1879 C, p. 233.
Scott, W. B. 1883 A, p. 50.

Anchisodon quadriplicatus Cope.

Cope, E. D. 1873 S, p. 1. (Hyracodon.)
Brandt, J. F. 1878 A, p. 32. (Aceratherium.)
Cope, E. D. 1873 CC, p. 14. (Hyracodon.)
1874 B, p. 495. (Aceratherium.)
1879 C, p. 234.
1879 L.
Matthew, W. D. 1899 A, p. 57. (Aceratherium.)
Roger, B. 1896 A, p. 185.
Trouessart, E. L. 1898 A, p. 745 (Anchisodon); p. 749 (Aceratherium).
Oligocene (White River); Colorado.

Anchisodon tubifer Cope.

Cope, E. D. 1879 L, p. 270.
1879 C, p. 234.
Matthew, W. D. 1899 A, p. 63. (Aceratherium.)
Roger, O. 1896 A, p. 185.
Trouessart, E. L. 1898 A, p. 745.
Miocene (John Day); Oregon.

HYRACODONTINÆ.

Branco, W, 1897 A, p. 20. (Hyracodontidæ.)
Osborn, H. F. 1898 I, p. 85.
Osborn and Wortman 1892 A, p. 93.
Steinmann and Döderlein 1890 A, p. 772.
Trouessart, E. L. 1898 A, p. 744.

Hyracodon Leidy. Type *H. nebraskensis* Leidy.

Leidy, J. 1856 H, p. 91.
Brandt, J. F. 1878 A, p. 22.
Cope, E. D. 1879 C, p. 234.
1879 V, pp. 771*a*, 771*d*.
1884 O, p. 691.
1887 L, p. 925.
Dawkins, W. B. 1870 A.
Flower, W. H. 1876 C, p. 107.
Flower and Lydekker 1891 A, p. 412.
Gaudry, A. 1877 A.
Leidy, J. 1869 A, p. 232.
1871 C, p. 356.
Lydekker, R. 1886 A, p. 158.
Marsh, O. C. 1875 B, p. 244.
1877 E.
Nicholson and Lydekker 1889 A, p. 1356.
Osborn, H. F., in Scott and Osborn 1890 B, p. 89.
1890 D, p. 511.
Pavlow, M. 1892 A.
Scott, W. B. 1896 B.
1897 B.
Scott and Osborn, 1883 A, pp. 10, 17.
Woodward, A. S. 1898 B, p. 334.
Wortman, J. L. 1893 A.
Zittel, K. A. 1893 B, p. 285.

Hyracodon arcidens Cope.

Cope, E. D. 1873 S, p. 2.
Brandt, J. F. 1878 A, p. 24.
Cope, E. D. 1873 CC, p. 14.
1874 B, p. 493.
1879 C, p. 234.
Matthew, W, D. 1899 A, p. 57.
Roger, O. 1896 A, p. 186.
Scott and Osborn 1887 B, p. 171.
Trouessart, E. L. 1898 A, p. 746.
Oligocene (White River); Colorado.

Hyracodon major Scott and Osb.

Scott and Osborn 1887 B, p. 170.
Matthew, W. D. 1899 A, p. 57.
Roger, O. 1896 A, p. 186.
Trouessart, E. L. 1898 A, p. 746.
Oligocene (White River). Locality unknown.

Hyracodon nebraskensis Leidy.

Leidy, J. 1850 C, p. 121. (Rhinoceros.)
Brandt, J. F. 1878 A, p. 28.
Cope, E. D. 1873 CC, p. 14.
1874 B, p. 493.
1879 C, p. 234.
1886 U, p. 83. [Aceratherium (Cænopus) pumilum, in part.]
1887 N, p. 1003, fig. 17.
1889 I, p. 154. (Aceratherium pumilum, in part.)
1891 A, p. 19, pl. iv, fig. 4. (Aceratherium pumilum.)
Hayden, F. V. 1858 B, p. 157. (Rhinoceros.)
King, C. 1878 A, p. 412. (Rhinoceros.)
Kowalevsky, W. 1873 A, p. 138.
Leidy, J. 1851 I, p. 331. (Aceratherium.)
1852, J, p. 556, pls. xii A, fig. 6; pl. xxii B, fig. 5. (Rhinoceros.)
1852 L, p. 63. (Rhinoceros.)
Leidy, J. 1854 A, pp. 86, 114, pls. xiv, xv. (Rhinoceros.)
1854 E, p. 157. (Aceratherium.)
1856 H, p. 92.
1865 B, p. 176.
1869 A, p. 391.
1871 C, p. 357.
Lydekker, R. 1886 A, p. 159.
Matthew, W. D. 1899 A, p. 57.
Osborn, H. F. 1896 C, pp. 711, 714, illus. 7.
1898 I, pp. 82, 93, figs. 2, 11.
1898 Q, p. 18.
Roger, O. 1896 A, p. 187.
Scott, W. B. 1896 B, pls. i-iii.
Scott and Osborn, 1887 B, p. 169.
Trouessart, E. L. 1898 A, p. 746.
Zittel, K. A. 1893 B, p. 286, fig. 226.
Oligocene (White River); South Dakota, Colorado, Nebraska.

The name of this species is commonly spelled *nebrascensis*. The original form is here given.

Hyracodon? planiceps Scott and Osb.

Scott and Osborn 1887 B, p. 170.
Matthew, W. D. 1899 A, p. 57.
Trouessart, E .L. 1898 A, p. 746.
Oligocene (White River); South Dakota?.

AMYNODONTIDÆ.

Scott and Osborn 1883 A, pp. 4, 12.
Branco, W. 1897 A, p. 21. (Amynodontinæ.)
Cope, E. D. 1883 II, p. 969.
Nicholson and Lydekker 1889 A, p. 1365. (Amynodontinæ.)
Osborn, H. F. 1890 D, p. 50. (Amynodontidæ, Amynodontinæ.)
1895 A, p. 95.
Osborn, H. F. 1898 A, pp. 79, 80.
Osborn and Wortman 1892 A, p. 93. (Amynodontidæ, Amynodontinæ.)
1894 A, p. 208.
Pavlow, M. 1893 A, p. 41.
Scott and Osborn 1887 B, p. 164.
Zittel, K. A. 1893 B, p. 286.

AMYNODON Marsh. Type *Diceratherium advenum* Marsh.

Marsh, O. C. 1877 D, p. 251.
Brandt, J. F. 1878 A, pp. 15, 25.
Cope, E. D. 1879 V, p. 771*f*.
1882 II, p. 926. (Orthocynodon.)
1883 II, p. 969. (Orthocynodon.)
1887 K.
1890 C, p. 472.
Flower and Lydekker 1891 A, p. 412.
Marsh, O. C. 1877 E.
1893 D, p. 409.
Nicholson and Lydekker 1889 A, p. 1365.
Osborn, H. F. 1890 D, pp. 506, 551 (Amynodon); p. 508 (Orthocynodon, as subgenus).
1892 B, p. 764.
1893 D.
Pavlow, M. 1892 A, p. 172. (Amynodon, Orthocynodon.)
1893 A.
Scott and Osborn 1882 A, p. 223 (Amynodon); p. 223 (Orthocynodon. type O. *antiquus*).
1883 A. (Orthocynodon, Amynodon.)
1884 A. (Orthocynodon.)
1887 A, p. 261.
1887 B, p. 164.
Zittel, K. A, 1893 B, p. 286.

Amynodon advenus Marsh.

Marsh, O. C. 1875 B, p. 244. (Diceratherium.)
Brandt, J. F. 1878 A, p. 32. (Diceratherium.)
King, C. 1878 A, p. 407.
L. P. B. 1885 A, p. 191, fig. 25.
Marsh, O. C. 1877 D, p. 252.
1884 F, fig. 72.
1885 B, fig. 106.
1897 D, p. 167, fig. 3. (Diceratherium.)
Matthew, W. D. 1899 A, p. 50.
Osborn, H. F. 1890 D, p. 508. [A. (Orthocynodon).]
Pavlow, M. 1892 A, p. 172. (Orthocynodon.)
Roger, O. 1896 A, p, 186.
Scott, W. B. 1892 A, p. 431.
Scott and Osborn 1882 A, p. 224. (Orthocynodon.)
1887 A, p. 262.
Trouessart, E. L. 1898 A, p. 746.
Eocene (Uinta); Utah.

Amynodon antiquus (Scott and Osb.).

Scott and Osborn 1883 A, p. 4, pl. i; text fig. 1. (Orthocynodon.)
Matthew, W. D. 1899 A, p. 46.
Osborn, H. F. 1890 D, p. 508. [A. (Orthocynodon).]

Pavlow, M. 1893 A, p. 37.
Roger, O. 1896 A, p. 186.
Trouessart, E. L. 1898 A, p. 746.
Eocene (Bridger); Wyoming.

Amynodon intermedius Osb.

Osborn, H. F. 1890 D, p. 508, pl. x, fig. 10.
Matthew, W. D. 1899 A, p. 50.
Osborn, H. F. 1895 A, p. 95.
Pavlow, M. 1893 A, p. 37, pl. iii.
Roger, O. 1896 A, p. 186.
Trouessart, E. L. 1898 A, p. 746.
Zittel, K. A. 1893 B, p. 287, fig. 227.
Eocene (Uinta); Utah.

METAMYNODON Scott and Osb. Type *M. planifrons* Scott and Osb.

Scott and Osborn 1887 B, p. 165.
Cope, E. D. 1887 K.
1887 N.
1890 C, p. 472.
Flower and Lydekker 1891 A, p. 412.
Nicholson and Lydekker 1889 A, p. 1365.
Osborn, H. F. 1890 D, p. 507.
1893 D, p. 40.
1893 E.
Pavlow, M. 1893 A, p. 41.
Wortman, J. L. 1893 A.
Zittel, K. A. 1893 B, p. 287.

Metamynodon planifrons Scott and Osb.

Scott and Osborn 1887 B, p. 165, figs. 7-9.
Cope, E. D. 1887 N, p. 1001, figs. 15, 16.
Matthew, W. D. 1899 A, p. 57.
Osborn, H. F. 1896 C, pp. 705, 710, illus. 6.
1898 I, p. 83, fig. 3; p. 91, fig. 10; p. 93, fig. 12.
1898 Q, p. 9.
Osborn and Wortman 1894 A, p. 209.
1895 A, p. 373, pls. x, xi.
Roger, O. 1896 A, p. 186.
Oligocene (White River); South Dakota.

RHINOCEROTIDÆ.

By some authors the spelling *Rhinoceridæ* is employed.

Blainville, H. M. D. 1864 A, iii, x, pls. i-xiv.
Branco, W. 1897 A, p. 20
Brandt, J. F. 1849 B.
1878 A.
Cope, E. D. 1879 C.
1879 V.
1881 G, pp. 378, 393.
1881 O.
1884 O, pp. 615, 691.
1887 K. (Cænopidæ.)
1897 N. (Rhinocerotidæ, Cænopidæ.)
Cuvier, G. 1834 A, iii, pp. 1-192, with plates.
Falconer, H. 1868 A, p. 309.
Flower, W. H. 1876 A.
1876 B, xiii, p. 328.
1883 D, p. 428.
Flower and Lydekker 1891 A, p. 402.
Gray, J. E. 1867 B.
1869 A.
Huxley, T. H. 1872 A, p. 307.
Leidy, J. 1869 A, p. 219.
1871 C, p. 356.
Lydekker, R. 1881 A.
1886 A, p. 90.
Nicholson and Lydekker 1889 A, p. 1364.
Osborn, H. F., in Scott and Osborn 1890 B, p. 90.
1893 D.
1898 I, pp. 79, 80, 94, 95.
1900 E, p. 885.
1900 H.
Owen, R. 1846 B, p. 587.
1866 B, p. 450.
1868 A, p. 356.
Pavlow, M. 1887 A, p. 353.
1888 A, p. 178.
1892 A.
Roger, O. 1889 A.
1896 A, p. 186.
Schlosser, M. 1886 A, p. 253.
1886 B, p. 22.
1888 A.
1890 C.
Scott, W. B. 1892 A, p. 432.
Scott and Osborn 1884 A.
Slade, D. D. 1893 A.
Steinmann and Döderlein 1890 A, p. 772.
Trouessart, E. L. 1898 A, p. 743.
Weyhe, — 1875 A, p. 121.
Woodward, A. S. 1898 B, p. 332.
Zittel, K. A. 1893 B, p. 281.

DICERATHERIINÆ.

Osborn, H. F. 1898 I, p. 121.
1900 E, p. 885.
1900 H, p. 232.
Osborn and Wortman 1892 A, p. 93.
Scott and Osborn 1883 A, p. 20. ("Diceratherium series.")

TRIGONIAS Lucas. Type *T. osborni* Lucas.

Lucas, F. A. 1900 D, p. 221.
Osborn, H. F. 1900 H, p. 233.

Trigonias osborni Lucas.

Lucas, F. A. 1900 D, p. 221, figs. 1, 2.
Osborn, H. F. 1900 D, p. 767, fig. 1.
Oligocene (White River); South Dakota.

Leptaceratherium Osb. Type *Aceratherium trigonodum* Osb. and Wort.

Osborn, H. F. 1898 I, p. 182.

Leptaceratherium trigonodum (Osb. and Wort.).

Osborn and Wortman 1894 A, p. 201, pl. i, fig. A; text fig. 1. (Aceratherium.)
Matthew, W. D. 1899 A, p. 57.
Osborn, H. F. 1898 I, pp. 113, 115, 132, pl. xii; pl. xiii, fig. 1; pl. xix, fig. 27; text figs. 25, 26, 35, 44.
Osborn and Wortman 1895 A, p. 373. (Aceratherium.)
Roger, O. 1896 A, p. 188. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 748. (Aceratherium.)
Oligocene (White River); South Dakota.

Cænopus Cope. Type *Aceratherium mite* Cope.

Cope, E. D. 1880 M, p. 610.
1881 G, p. 393.
1884 O, p. 691.
1887 K.
Osborn, H. F. 1900 E, p. 233.
Zittel, K. A. 1893 B, pp. 289, 291. (Syn. of Aceratherium.)

Cænopus copei Osb.

Osborn, H. F. 1898 I, pp. 113, 128, 131, 146, pl. xv; text figs. 25, 33, 34, 44. (Aceratherium.)
Matthew, W. D. 1899 A, p. 57. (Aceratherium.)
Osborn, H. F. 1900 H, p. 226.
Osborn and Wortman 1894 A, p. 203, pl. ii, fig. B; text fig. 2, B. (Aceratherium mite, not of Cope.)
1895 A, p. 371. (No name.)
Trouessart, E. L. 1899 A, p. 1346. (Aceratherium.)
Oligocene (White River); South Dakota.

Cænopus mitis Cope.

Cope, E. D. 1874 B, p. 493. (Aceratherium.)
Brandt, J. F. 1878 A, p. 30. (Aceratherium.)
Cope, E. D. 1879 C, p. 235. (Aceratherium.)
1879 P, p. 333. (Aceratherium.)
1879 V, p. 771c. (Aceratherium.)
1880 M. (Cænopus.)
1885 H. (Aceratherium.)
1886 U, p. 83. (Aceratherium mite; A. pumilum, in part.)
1887 K. (Cænopus.)
1889 I, p. 154. (Aceratherium mite; A. pumilum, in part.)
1891 A, p. 19, pl. iv, figs. 2, 3 (Cænopus); p. 19, pl. iv, fig. 4. (C. pumilis.)
Lydekker, R. 1881 A, p. 21. (Aceratherium.)
Matthew, W. D. 1899 A, p. 57. (Aceratherium.)
Osborn, H. F. 1893 C. (Aceratherium.)
1898 I, pp. 89, 136, figs. 8, 36, 37, 39. (Aceratherium.)
Osborn and Wortman 1894 A, p. 208. (A. pumilum.)
1895 A, p. 371. (Aceratherium.)
Roger, O. 1896 A, p. 187 (Rhinoceros pumilum); p. 188 (R. mite).
Scott, W. B. 1896 B, p. 367. (Aceratherium.)
Trouessart, E. L. 1898 A, p. 748. (Aceratherium mite, A. pumilum.)
Wortman, J. L. 1893 A, p. 104. (Aceratherium.)
Oligocene (White River); South Dakota, Canada.

Cænopus occidentalis (Leidy).

Leidy, J. 1851 E, p. 276. (Rhinoceros.)
Brandt, J. F. 1878 A, p. 31. (Aceratherium.)
Cope, E. D. 1873 CC, p. 14. (Aceratherium.)
1874 B, p. 495. (Aceratherium.)
Cope, E. D. 1879 C, p. 235. (Aceratherium.)
1879 P, p. 333. (Aceratherium.)
1887 K.
1887 N, p. 1000, fig. 14.
1891 A, p. 19. (Aceratherium.)
King, C. 1878 A, p. 412. (Aceratherium.)
Hayden, F. V. 1858 B, p. 157. (Rhinoceros.)
Leidy, J. 1850 B, p. 119. (Rhinoceros; no description.)
1851 I, p. 331. (Aceratherium.)
1852 J, p. 552, pl. ix, figs. 1, 2. (Rhinoceros.)
1852 L, p. 64. (Rhinoceros.)
1853 D, p. 392. (Rhinoceros.)
1854 A, pp. 81, 114, pls. xii, xiii. (Rhinoceros.)
1854 E, p. 157. (Aceratherium.)
1865 B. (Rhinoceros.)
1869 A, pp. 220, 390, pl. xxi, fig. 34; pl. xxii; pl. xxiii, figs. 1–3. (Rhinoceros, Aceratherium.)
1871 C, p. 356. (Rhinoceros.)
Lydekker, R. 1881 A, p. 21. (Aceratherium.)
1886 A, p. 143. (Rhinoceros.)
Matthew, W. D. 1899 A, p. 57. (Aceratherium.)
Osborn, H. F. 1893 C. (Aceratherium.)
1898 I, pp. 90, 109, 128, 131, 134, 150, pl. xiii, figs. 5, 6, 7; pl. xvi; pl. xix, fig. 9; text figs. 9, 21, 33, 34, 35. (Aceratherium.)
1900 H, p. 245. (Cænopus.)
Osborn and Wortman 1894 A, p. 204, pl. ii, fig. C; text fig. 3, A. (Aceratherium.)
1895 A, p. 373, fig. 12. (Aceratherium.)
Pavlow, M. 1892 A. (Aceratherium.)
Pohlig, H. 1893 A, p. 41, pl. iii. (Aceratherium.)
Roger, O. 1896 A, p. 188. (Rhinoceros.)
Scott and Osborn 1887 B, p. 169. (Aceratherium.)
Trouessart, E. L. 1898 A, p. 747. (Aceratherium.)
Oligocene (White Biver); South Dakota, Nebraska, Colorado, Canada.

Cænopus simplicidens Cope.

Cope, E. D. 1891 D, p. 48. (Cænopus.)
Matthew, W. D. 1899 A, p. 57. (Aceratherium.)
Osborn, H. F. 1898 I, p. 145, fig. 43. (Aceratherium.)
Osborn and Wortman 1894 A, 209. (Aceratherium.)
Roger, O. 1896 A, p. 188. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 748. (Aceratherium.)
Oligocene (White River); Nebraska.

Cænopus tridactylus Osb.

Osborn, H. F. 1893 C. (Aceratherium.)
Hatcher, J. B. 1894 B. (Diceratherium proavitum.)
1897 A. (Diceratherium proavitum and Aceratherium tridactylum.)

Matthew, W. D. 1899 A, p. 57. (Aceratherium.)
Osborn, H. F. 1893 E, p. 55. (Aceratherium.)
1898 I, pp. 84, 94, 109, 115, 128, 131, 134, 158, pl. xiii, fig. 8; pl. xvii; pl. xix, fig. 30; pl. xx, text figs. 4, 13, 21, 26, 33 34, 35 48, 49. (Aceratherium.)
1898 Q, pp. 13, 15. (Aceratherium.)
1900 H, p. 245. (Cænopus.)
Osborn and Wortman 1894 A, p. 206, pl. ii, fig. E; pl. iii (Aceratherium tridactylum); p. 208 (Diceratherium proavitum).
Osborn and Wortman 1895 A, p. 373. (Aceratherium.)
Roger, O. 1896 A, p. 189. (Rhinoceros proavitum.)
Scott, W. B. 1896 B, p. 381. (Aceratherium.)
Trouessart, E. L. 1898 A, p. 748 (Aceratherium tridactytum); p. 752 (Diceratherium proavitum).
Oligocene (White River); South Dakota. North Dakota.

DICERATHERIUM Marsh. Type *D. armatum* Marsh.

Marsh, O. C. 1875 B, p. 242.
Branco, W. 1897 A, p. 21.
Brandt, J. F. 1878 A, p. 32.
Cope, E. D. 1879 C, p. 233.
1879 V, pp. 771*b*, 771*h*.
1881 G, p. 393.
1884 O, p. 692.
1887 N, p. 1004.
Flower, W. H. 1876 B, xiii, p. 327.
Flower and Lydekker 1891 A, p. 411.
Hatcher, J. B. 1894 B.
Lydekker, R. 1886 A. p. 91. (Syn. of Rhinoceros.)
Marsh, O. C. 1876 G, p. 60.
1877 E.
Matthew, W. D. 1899 A, p. 22.
Nicholson and Lydekker 1889 A, p. 1368.
Osborn, H. F. 1898 I.
1900 H, p. 232.
Schlosser, M. 1886 B, p. 24.
Scott and Osborn 1883 A, p. 21.
Woodward, A. S. 1898 B, p. 335.
Zittel, K. A. 1893 B, p. 292.

Diceratherium annectens Marsh.

Marsh, O. C. 1873 H, p. 409. (Rhinoceros.)
Brandt, J. F. 1878 A, p. 4. (Rhinoceros.)
Marsh, O. C. in King, C. 1878 A, p. 424. (Diceratherium.)
Leidy, J. 1873 B, p. 328. (Rhinoceros.)
Matthew, W. D. 1899 A, p. 63. (Aceratherium.)
Trouessart, E. L. 1898 A, p. 748. (Aceratherium.)
Miocene (John Day); Oregon.

Diceratherium armatum Marsh.

Marsh, O. C. 1875 B, p. 242.
Brandt, J. F. 1878 A, p. 32.
King, C. 1878 A, p. 424.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 189. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 752.
Miocene (John Day); Oregon.

Diceratherium hesperium (Leidy).

Leidy, J. 1865 B, p. 177. (Rhinoceros.)
Brandt, J. F. 1878 A, p. 40. (Rhinoceros.)
Cope, E. D. 1879 p. 333. (Syn.? of A. pacificum.)
Dana, J. D. 1879 A, p. 233. (Rhinoceros.)
Leidy, J. 1869 A, pp. 230, 390, pl. xxiii, figs. 11, 12. (Rhinoceros.)
1870 P, p. 112. (Rhinoceros.)
1871 C, p. 356. (Rhinoceros.)
1873 B, pp. 220, 328, pl. ii, figs. 8, 9. (Rhinoceros hesperius?.)
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 189. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 751. (Aphelops.)
Whitney, J. D. 1879 A, p. 243. (Rhinoceros.)
Miocene; California: (John Day); Oregon.

Diceratherium nanum Marsh.

Marsh, O. C. 1875 B, p. 243.
Brandt, J. F. 1878 A, p. 32.
King, C. 1878 A, p. 424.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 189. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 752.
Miocene (John Day); Oregon.

Diceratherium oregonense (Marsh).

Marsh, O. C. 1873 H, p. 410. (Rhinoceros.)
Brandt, J. F. 1878 A, p. 41. (Rhinoceros.)
Leidy, J. 1873 B, p. 328. (Rhinoceros.)
Matthew, W. D. 1899 A, p. 71. (Aceratherium.)
Roger, O. 1896 A, p. 189. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 751. (Aphelops.)
Miocene (Loup Fork); Oregon.

Diceratherium pacificum (Leidy).

Leidy, J. 1871 M, p. 248. (Rhinoceros.)
Brandt, J. F. 1878 A, p. 41. (Rhinoceros.)
Cope, E. D. 1879 B, pp. 58, 235.
1879 C, p. 229.
1879 P, p. 333. (Aphelops.)
1879 V, p. 771*c*. (Diceratherium.)
King, C. 1878 A, p. 424 (Rhinoceros.)
Leidy, J. 1870 P, p. 112. (Rhinoceros occidentalis.)
1873 B, pp. 221, 328, pl. ii, figs. 6, 7; pl. vii, figs. 24, 25. (Rhinoceros.)
Lydekker, R. 1881 A, p. 21.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 188. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 748.
Miocene (John Day); Oregon.

Diceratherium truquianum (Cope).

Cope, E. D. 1879 P, p. 333. (Aceratherium.)
1879 C, pp. 229, 335. (Aceratherium.)
Lydekker, R. 1881 A, p. 21. (Aceratherium.)
Matthew, W. D. 1899 A, p. 63. (Aceratherium.)
Roger, O, 1896 A, p. 188. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 748. (A. trucquianum.)
Miocene (John Day); Oregon.

ELASMOTHERIINÆ.

Bonaparte, C. L. 1851, Conspect. Syst. Mastozool., pp. 472-479. (Elasmotheriina.)
Gill, T. 1872 B, pp. 12, 88. (Elasmotheriidæ.)
Osborn and Wortman 1892 A, p. 93. (Aceratheriinæ.)
Osborn and Wortman 1895 A, p. 371. (Acerатheriinæ.)
Osborn, H. F. 1898 I, p. 121. (Aceratheriinæ.)
1900 H, p. 240. (Aceratheriinæ.)
Zittel, K. A. 1893 B, p. 296

ACERATHERIUM Kaup. Type *Rhinoceros incisivus* Cuv.

Kaup, P. 1832 B, p. 904.
Branco, W. 1897 A, p. 21.
Brandt, J. F. 1878 A, pp. 11, 37.
Bronn, H. G. 1838 A, p. 1213, pl. xlvi, fig. 2.
Cope, E. D. 1874 B, p. 493.
1879 C, pp. 229, 235.
1879 P, p. 333.
1879 V, p. 771*a*.
1881 G, p. 393.
1883 Y.
1884 O, p. 691. (Aceratherium.)
1887 K.
1887 N, p. 1004.
Duvornoy, G. L. 1855 A, p. 51.
Filhol, H. 1891 A, p. 201.
Flower, W. H. 1876 B, xiii, p. 328.
Flower and Lydekker 1889 A, p. 411. (Syn. of Rhinoceros.)
Gaudry, A. 1878 B, p. 46.
Hatcher, J. B. 1894 C, p. 240. (Aphelops.)
Leidy J. 1851 I, p. 331.
1854 A, p. 81.
Lydekker, R. 1881 A, p. 9.
1884 B, pp. 2, 8.
1886 A, p. 91. (Syn. of Rhinoceros.)
Marsh, O. C. 1877 E.
Mermier, É. 1896 A, p. 225.
Nicholson and Lydekker 1889 A, p. 1367.
Osborn, H. F. 1890 D, pp. 511, 550 (Aceratherium). p. 542 (Aphelops).
1898 C.
1898 E, p. 52.
1898 I.
1898 P.
1899 A, p. 161, pl. i.
1900 H, p. 241. (Aceratherium or Aphelops.)
Peters, K. 1870 A.
Pictet, F. J. 1853 A, p. 296.
Pomel, A. 1853 A, p. 76. (Acerotherium.)
Schlosser, M. 1886 A, p. 253.
1886 B, p. 24 (Aphelops); p. 25 (Acerathorium).
Scott, W. B. 1892 A, p. 481.
1895 C, p. 122. (Aphelops.)
1896 B. (Aceratherium, Aphelops.)
Scott and Osborn 1883 A, p. 10 *et seq.*; p. 21. (Aceratherium, Aphelops.)
1887 B, p. 169.
1890 B, p. 89 (Aceratherium); p. 92 (Aphelops).
Steinmann and Döderlein 1890 A, p. 774. (Aceratherium, Peraceras, Aphelops.)
Williston, S. W. 1894 E.
Woodward, A. S. 1898 B, p. 334. (Aceratherium.)
Wortman, J. L. 1893 A.
Zittel, K. A. 1893 B, p. 289.

Aceratherium platycephalum Osb. and Wort.

Osborn and Wortman 1894 A, p. 206, pl. ii, E; text figs. 2, E; 3, D.
Matthew, W. D. 1899 A, p. 57.
Osborn, H. F. 1898 I, pp. 115, 116, 128, 130, 134, pl. xiii, fig. 9; pl. xviii; text figs. 26, 27, 33, 35.
1900 H, pp. 240, 243.
Osborn and Wortman 1895 A, p. 373.
Roger, O. 1896 A, p. 188. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 748.
Oligocene (White River); South Dakota.

APHELOPS Cope. Type *A. megalodus* Cope.

Cope, E. D. 1873 C, p. 1.
Branco, W. 1897 A, p. 21. (Aphelops, Peraceras.)
Brandt, J. F, 1878 A, p. 30.
Cope, E. D. 1875 F, p. 71.
1877 K, p. 316.
1879 C, pp. 229, 235.
1879 P, p. 333.
1879 V, p. 771*a*.
1880 K, p. 540. (Peraceras, type *Aphelops superciliosus.*)
1881 G, p. 393. (Aphelops, Peraceras.)
1884 G, pp. 8, 9.
1884 O, p. 691. (Aphelops, Peraceras.)
1887 N, p. 1004. (Peraceras.)
Flower, W. H. 1876 B, xiii, p. 328.

Aphelops crassus (Leidy).

Leidy, J. 1858 E, p. 28. (Rhinoceros.)
Brandt, J. F. 1878 A, p. 30. (Aceratherium.)
Cope, E. D. 1874 B, p. 521. (Aceratherium.)
1874 P, p. 12.
1877 K, p. 317.
1879 C, p. 237.
1879 V, p. 771*j*. (Aceratherium.)
Hayden, F. V. 1858 B, p. 157. (Rhinoceros.)
King, C. 1878 A, p. 424. (Diceratherium.)
Leidy, J. 1865 B. (Rhinoceros.)
1869 A, pp. 228, 390, pl. xxiii, figs. 4-9. (Rhinoceros.)
1871 C, p. 356. (Rhinoceros.)
Lydekker, R. 1881 A, p. 20. (Aceratherium.)
Matthew, W. D. 1899 A, p. 71. (Syn.? of Aceratherium megalodum.)
Scott and Osborn 1890 B, p. 92.
Roger, O. 1896 A, p. 188. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 751.
Miocene (Loup Fork); Nebraska, Kansas, Colorado.

Aphelops jemezanus Cope.

Cope, E. D. 1875 P, p. 260.
1875 F, p. 72.
1877 K, pp. 317, 319, pl. lxxiii, figs. 3, 4; pl. lxxiv, fig. 4.
Lydekker, R. 1881 A, p. 21. (Aceratherium.)
Matthew, W. D. 1899 A, p. 72. (Aceratherium.)
Roger, O. 1896 A, p. 189. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 751.
Miocene (Loup Fork); New Mexico.

Aphelops malacorhinus Cope.

Cope, E. D. 1878 X, p. 488.
1878 H, p. 383.
1879 C, pp. 229, 237.
1879 V, p. 771*i*, figs. 7, 8.
1880 K, p. 540. (Peraceras.)
1892 AA. (A. malacorhinus, A. longipes.)
Leidy, J. 1890 A. (Rhinoceros longipes.)
Leidy and Lucas 1896 A, p. 45, pl. x, figs. 11–16; pl. xi, figs. 3, 4, 11; pl. xiii, figs. 6–8; pl. xiv, fig. 2; pl. xvi, figs. 5–10.
Lydekker, R. 1881 A, p. 21. (Aceratherium.)
Matthew, W. D. 1899 A, p. 71. (?Teleoceras.)
Roger, O. 1896 A, p. 189. (Rhinoceros longipes.)
Trouessart, E. L. 1898 A, p. 75.
Miocene (Loup Fork); Kansas, Florida.

Aphelops? matutinus (Marsh).

Marsh, O. C. 1870 F. (Rhinoceros.)
1893 D, p. 411, pl. x, fig. 4. (Rhinoceros.)
Roger, O. 1896 A, p. 188. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 748. (Aceratherium.)
Miocene; New Jersey.

Aphelops megalodus Cope.

Cope, E. D. 1873 C, p. 1. (Aceratherium; made type of Aphelops.)
Brandt, J. F. 1878 A, p. 30. (Aceratherium.)
Cope, E. D. 1873 CC, p. 14.
1874 B, p. 520. (Aceratherium.)
1874 P, p. 11.
1875 F, p. 71.
1877 K, p. 317.
1878 X.
Cope, E. D. 1879 C, pp. 229, 237.
1879 V, p. 771*c*, figs. 1, 2, 4, 5.
1881 J, p. 270.
1889 C, p. 189 *et seq.*
Lydekker, R. 1881 A, p. 21. (Aceratherium.)
1886 A, p. 141. (Rhinoceros.)
Matthew, W. D. 1899 A, p. 71. (Aceratherium.)
Osborn, H. F. 1898 C. (Aceratherium.)
1898 C. (Aceratherium.)
1898 I, p. 115, fig. 26. (Aceratherium.)
Pavlow, M. 1892 A, p. 176. (Aceratherium.)
Roger, O. 1896 A, p. 188. (Syn. of Rhinoceros crassus.)
Trouessart, E. L. 1898 A, p. 751.
Zittel, K. A. 1893 B, p. 291, fig. 232. (Rhinoceros.)
Miocene (Loup Fork); Colorado.

Aphelops meridianus (Leidy).

Leidy, J. 1865 B, p. 176. (Rhinoceros.)
Brandt, J. F. 1878 A, p. 40. (Rhinoceros.)
Cope, E. D. 1875 F, p. 71.
1877 K, pp. 316, 317, pl. lxxiii, figs. 1, 2; pl. lxxiv, figs. 1–3.
1879 C, pp. 229, 237.
Leidy, J. 1869 A, pp. 229, 390, pl. xxiii, fig. 10. (Rhinoceros.)
1871 C, p. 356. (Rhinoceros.)
Lydekker, R. 1881 A, p. 21. (Aceratherium.)
Matthew, W. D. 1899 A, p. 71. (Syn.? of A. malacorhinus.)
Roger, O. 1896 A, p. 189. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 751.
Miocene (Loup Fork); Texas, New Mexico.

Aphelops profectus (Matth.).

Matthew, W. D. 1899 A, p. 71. (Aceratherium.)
Miocene (Loup Fork); Colorado.

Aphelops superciliosus (Cope).

Cope, E. D. 1880 K, p. 540. (Peraceras.)
1887 N, p. 1004, fig. 18. (Peraceras.)
Matthew, W. D. 1899 A, p. 71. (Teleoceras.)
Osborn, H. F. 1898 I, p. 106, fig. 18; p. 109, fig. 21.
Roger, O. 1896 A, p. 189. (Rhinoceros.)
Trouessart, E. L. 1898 A, p. 751.
Miocene (Loup Fork); Nebraska.

TELEOCERATINÆ.

Osborn, H. F. 1900 H, p. 249. (Brachypodinæ.)

TELEOCERAS Hatcher. Type *T. major* Hatcher.

Hatcher, J. B. 1894 A.
1894 C, p. 241.
Osborn, H. F. 1898 E, p. 51.
1898 I, p. 98. (Syn. of Aceratherium.)
1900 H.

Teleoceras fossiger (Cope).

Cope, E. D. 1878 H, p. 382. (Aphelops.)
1878 X. (Aphelops.)
1879 C, pp. 229, 237. (Aphelops.)
1879 V, p. 771*e*, figs. 3, 6. (Aphelops.)
1880 E, p. 141. (Aphelops.)
1883 R. (Aphelops.)
1884 G, p. 8. (Aphelops.)
Cope, E. D. 1884 J, p. 309. (Aphelops.)
1884 Q. (Aphelops.)
1887 N, p. 1006, fig. 22. (Aphelops.)
1892 AA. (Aphelops proterus.)
1893 A, p. 20. (Aphelops.)
Hatcher, J. B. 1894 A. (Teleoceras major.)
1894 C, p. 241, pl. i, fig. 1; pl. ii, figs. 2, 6 (Teleoceras major); pl. ii, figs. 3, 5 (Aphelops fossiger).
Leidy, J. 1885 A, p. 33. (Rhinoceros proterus Leidy.)
1886 A, figs. 1, 2. (?Eusyodon maximus.)
1887 A. (Rhinoceros proterus.)
1890 A. (Rhinoceros proterus.)

Leidy, J. 1892 A. (Rhinoceros proterus.)
Leidy and Lucas 1896 A, p. 41, pls. viii, ix; pl. x, figs. 1-10; pl. xi, figs. 1, 2, 5-10; pl. xii, figs. 1-14; pl. xiii, figs. 1-5; pl. xiv, figs. 1-7; pl. xv, figs. 1-8. (Aphelops fossiger, with Rhinoceros proterus Leidy a synonym.)
Lydekker, R. 1881 A, p. 20.
1884 B, p. 10.
Marsh, O. C. 1887 B, p. 325, figs. 3, 4. (Aceratherium acutum.)
1897 C, pp. 525, 527, fig. 102. (Aceratherium acutum.)
Matthew, W. D. 1899 A, p. 71.
Osborn, H. F. 1898 C.
1898 C, fig. 1. (Teleoceras.)
Osborn, H. F. 1898 E, pls. iv, iv A. (Teleoceras.)
1898 I, pp. 99, 109, 110, figs. 15, 21, 22. (Aceratherium.)
1898 Q, p. 12.
1900 H, p. 249.
Pavlow, M. 1892 A, p. 176.
Roger, O. 1896 A, p. 188. (Rhinoceros.)
Scott, W. B. 1893 B, p. 659. (Aphelops.)
Scott and Osborn 1890 B, p. 92, pls. ii, iii, text fig. 15. (Aphelops.)
Trouessart, E. L. 1898 A, p. 751. (Aphelops.)
Williston, S. W. 1894 E, pl. viii. (Aphelops.)
Zittel, K. A. 1893 B, p. 292, fig. 233. (Aphelops.)

Miocene (Loup Fork); Kansas, Nebraska, Colorado, Florida.

RHINOCEROTINÆ.

Branco, W. 1897 A, p. 21.
Brandt, 1878 A, p. 25.
Osborn, H. F. 1898 I, p. 121. (Ceratorhinæ.)
1900 H, p. 264. (Ceratorhinæ, Rhinocerotinæ.)
Osborn and Wortman 1892 A, p. 93.
Roger, O. 1896 A, p. 186. (Rhinocerinæ.)
Trouessart, E. L. 1898 A, p. 747.
Zittel, K. A. 1893 B, p. 288. (Rhinocerinæ.)

Although no species found in North America is here admitted to this subfamily and to the genus *Rhinoceros*, citations to some of the literature of this subfamily and the genus are given below, since the genus *Rhinoceros* is the type of this whole group. For additional bibliography see Osborn 1898 I, pp. 121-125; 1900 H, p. 266.

RHINOCEROS Linn.

Linnæus C., 1758, Syst. Nat., ed. 10, i, p. 56.
Brandt, J. F. 1849 B.
1878 A, p. 83.
Cope, E. D. 1879 C, p. 229.
1881 G, p. 393.
1884 O, p. 692.
1887 N, p. 1003.
1889 C, p. 258.
Cuvier, G. 1834 A, iii, pp. 1-185, with plates.
Duvornoy, G. L. 1855 A.
Filhol, H. 1891 A, p. 194.
Flower, W. H. 1876 A.
1885 A.
Flower and Lydekker 1891 A, p. 402.
Gaudry, A. 1878 B, p. 44.
Gervais, P. 1859 A, p. 87.
Gray, J. E. 1867 B, p. 1008.
1869 A, p. 300.
Huxley, T. H. 1872 A, p. 307.
Kowalevsky, W. 1873 A, pp. 219, 222.
Leidy, J. 1854 A, pp. 79, 114.
1871 C, p. 356.
Lydekker, R. 1881 A.
1886 A, p. 91.
Meyer, H. 1864 A.
Nicholson and Lydekker 1889 A, p. 1368.
Osborn, H. F. 1898 E, p. 52.
1898 I.
Owen, R. 1844 A, p. 220.
1845 B, p. 587.
1846 A, p. 325.
Pavlow, M. 1888 A, p. 173.
1892 A.
Peters, K. 1870 A.
Roger, O. 1896 A, p. 186.
Trouessart, E. L. 1898 A, p. 752.
Zittel, K. A. 1893 B, p. 293.

Rhinoceroides alleghaniensis Featherst.

Featherstonhaugh, G. W. 1831 A, pl. i.
Blainville, H. M. D. 1864 A, Rhinoceros, p. 172. (Rhinoceros.)
Giebel, C. G. 1847 A, p. 185.
Harlan, R. 1834 B, p. 62.
1835 B, p. 268.
Leidy, J. 1854 A, pp. 10, 79.
1869 A, p. 444.

The subject of the above references is now generally conceded to be merely a worn piece of sandstone.

Suborder ARTIODACTYLA Owen.

Owen, R. 1848 A, p. 131.
Baur, G. 1884 F.
Branco, W. 1897 A, p. 22.
Burmeister, H. 1867 A, p. 236. (Paridigitata.)
Cope, E. D. 1873 E, p. 562.
1873 F, p. 39.
1874 M.
1880 B, p. 458.
Cope, E. D. 1881 I, p. 269.
1881 J.
1882 A.
1882 Y.
1883 D. (Diplarthra, part.)
1884 C.
1884 H.
1884 O, pp. 379, 716.

Cope, E. D. 1884 DD.
1885 B.
1886 C, p. 615.
1887 B.
1887 N, p. 985.
1887 S.
1888 K, p. 163. (Diplarthra, part.)
1888 X.
1889 C, p. 148 *et seq.*
1889 G.
1891 N, p. 84. (Diplarthra, part.)
1898 B, p. 125. (Diplarthra, part.)
Cope and Wortman 1884 A, p. 15.
Earle, C. 1893 B.
Flower, W. H. 1873 A.
1874 A.
1876 B, xiii, p. 327.
1883 A.
1883 D, p. 428.
1885 A.
Flower and Lydekker 1891 A, p. 275.
Gadow, H. 1898 A, p. 48.
Gegenbaur, C. 1898 A.
Gill, T. 1872 A, p. 298.
1872 B, pp. 8, 71.
Gill and Coues 1877 A, p. 1020.
Gruber, W. 1859 A. (Multungulata.)
Haeckel, E. 1895 A, p. 549.
Hay, O. P. 1899 F, p. 682.
Huxley, T. H. 1870 A, p. 440.
1872 A, p. 312.
Kowalevsky, W. 1874 A.
Leuthardt, F. 1891 A, p. 121. (Paraxonia.)
Lydekker, R. 1885 C.
1885 E, p. 469. (Diplarthra, part.)
1896 B.
Marsh, O. C. 1877 E.
1884 F, p. 177. (Clinodactyla, Paraxonia.)
Nicholson and Lydekker 1889 A, p. 1313.
Osborn, H. F. 1893 A, p. 379 *et seq.*
1893 D.
1900 C, p. 568.
Owen, R. 1845 B, p. 527. ("Anisodactyle ungulates.")
1857 A.
1866 B, p. 457.
1868 A, p. 343.
Paulli, S. 1900 A, p. 193.
Pavlow, M. 1900 A.
Pomel, A. 1848 B, p. 326. ("Artiodactylea.")
Röse, C. 1896 A.
Roger, O. 1896 A, p. 196.
Rütimeyer, L. 1865 A. (Ungulata paridigitata.)
1888 A. (Diplarthra, part.)
Schmidt, O. 1886 A, p. 137.
Schlosser, M. 1885 A, p. 684.
1886 B.
1888 A.
1889 A.
1890 C.
1890 D.
1892 A.
Scott, W. B. 1892 A, p. 433.
Slade, D. D. 1893 A.
Steinmann and Döderlein 1890 A, p. 784.
Tomes, C. S. 1898 A, p. 392.
Tornier, G. 1888 A.
Turner, H. N. 1848 A.
Weber, M. 1886 A, p. 226.
Weyhe, ——. 1875 A, p. 118.
Wiedersheim, R. 1881 A.
Woodward, A. S. 1898 B, p. 338.
Wortman, J. L. 1883 A, p. 706.
1885 A, p. 297. (Diplarthra, part.)
1893 B, p. 208. (Diplarthra, part.)
Zittel, K. A. 1893 B, pp. 315, 727.

Superfamily PANTOLESTOIDEA Cope.

Cope, E. D. 1887 B, p. 378.
Cope, E. D. 1898 B, p. 130. (Trigonolestoidea.)

PANTOLESTIDÆ.

Cope, E. D. 1884 O, p. 719.
1886 C, p. 615.
1887 B, p. 378.
1888 X, p. 1079.
Haeckel, E. 1895 A, p. 554. (Pantolestida.)
Matthew, W. D. 1899 A, pp. 34, 48. (Homacodontidæ, part.)
Roger, O. 1896 A, p. 198.
Steinmann and Döderlein 1890 A, p. 780.
Zittel, K. A. 1893 B, p. 324.

PANTOLESTES Cope. Type *P. longicaudus* Cope.

Cope, E. D. 1872 N, p. 466.
Ameghino, F. 1896 A, p. 444.
Cope, E. D. 1875 C, pp. 13, 15.
1875 L, p. 21.
1877 K, pp. 134, 145.
1882 E, p. 149.
1883 M, p. 547.
1884 H, pp. 21, 25.
1884 O, pp. 215, 717.
1885 B.
1886 C, p. 617.
Marsh, O. C. 1894 L, p. 263. (Homacodon, in part.)
Matthew, W. D. 1899 A, p. 48.
Osborn, H. F. 1893 D, p. 42.
Pavlow, M. 1900 A, p. 59.
Scott, W. B. 1890 A, p. 486.
1891 A, pp. 9, 45, 66.
1892 A, p. 433.
Schlosser, M. 1886 B, p. 39.
Trouessart, E. L. 1898 A, p. 800.
Wortman, J. L. 1898 A, pp. 101, 135.
Zittel, K. A. 1893 B, p. 324.

In many of the papers here cited this genus includes species which are here assigned to *Trigonolestes*. The systematic position of *Pantolestes longicaudus* is in doubt.

Pantolestes longicaudus Cope.

Cope, E. D. 1872 N, p. 467.
1873 E, p. 549. (Notharctus.)
1873 U, p. 3. (Notharctus.)
1882 E, p. 150.
1883 W, p. 191.
Cope, E. D. 1884 O, pp. 717, 725, pl. xxiv, figs. 13-17.
1886 C, p. 617.
Matthew, W. D. 1899 A, p. 48.
Roger, O. 1896 A, p. 198.
Trouessart, E. L. 1898 A, p. 800.
Eocene (Bridger); Wyoming.

TRIGONOLESTES Cope. Type *Pantolestes brachystomus* Cope.

Cope, E. D. 1894 E, p. 868.
Ameghino, F. 1896 A, p. 444.
Cope, E. D. 1897 B.
Matthew, W. D. 1899 A, p. 34.
Osborn and Earle 1895 A, p. 70.
Scott, W. B. 1899 A, pp. 46, 62.

Trigonolestes brachystomus Cope.

Cope, E. D. 1882 E, p. 187. (Mioclænus.)
1882 K. (Mioclænus.)
1883 M, p. 547. (Pantolestes.)
1884 O, pp. 718, 721, pl. xxiii*d*, figs. 16-21. (Pantolestes.)
1886 C, p. 617, fig. 8. (Pantolestes.)
1888 X, p. 1086, fig. 2. (Pantolestes.)
1894 E, p. 868. (Trigonolestes.)
Matthew, W. D. 1899 A, p. 34.
Roger, O. 1896 A, p. 198.
Schlosser, M. 1886 B, p. 135, pl. v, fig. 19; pl. vi, fig. 29. (Pantolestes.)
Scott, W. B. 1891 A, p. 46. (Pantolestes.)
1892 A, pp. 433, 438, fig. 8^4. (Pantolestes.)
Trouessart, E. L. 1898 A, p. 800.
Zittel, K A. 1893 B, p. 325, fig. 262. (Pantolestes.)
Eocene (Wasatch); Wyoming.

Trigonolestes chacensis (Cope).

Cope, E. D. 1875 C, p. 15. (Pantolestes.)
1877 K, p. 146, pl. xlv, fig. 17. (Pantolestes.)
1882 E, p. 150. (Pantolestes.)
1884 O, pp. 717, 719, pl. xxiv*d*, fig. 5. (Pantolestes.)
Matthew, W. D. 1899 A, p. 34. (Trigonolestes.)
Roger, O. 1896 A, p. 198. (Pantolestes.)
Trouessart, E. L. 1898 A, p. 800. (Pantolestes.)
Eocene (Wasatch); Wyoming.

Trigonolestes etsagicus (Cope).

Cope, E. D. 1882 E, p. 189. (Mioclænus.)
Cope, E. D. 1883 M, p. 547. (Pantolestes.)
1884 O, pp. 717, 724, pl. xxv*e*, fig. 21. (Pantolestes.)
1886 C, p. 618. (Pantolestes.)
Matthew, W. D. 1899 A, p. 34. (Trigonolestes.)
Roger, O. 1896 A, p. 198.
Trouessart, E. L. 1898 A, p. 800. (Pantolestes.)
Wortman, J. L. 1898 A, p. 101, footnote. (Syn.? of Eohyus distans.)
Eocene (Wasatch); Wyoming.

Trigonolestes metsiacus (Cope).

Cope, E. D. 1882 E, p. 149. (Pantolestes.)
1884 O, pp. 717, 719, pl. xxiv*d*, fig. 6. (Pantolestes.)
Matthew, W. D. 1899 A, p. 34. (Trigonolestes.)
Roger, O. 1896 A, p. 199. (Pantolestes.)
Trouessart, E. L. 1898 A, p. 800. (Pantolestes.)
Eocene (Wasatch); Wyoming.

Trigonolestes nuptus Cope.

Cope, E. D. 1882 E, p. 150. (Pantolestes.)
1884 O, pp. 718, 720, pl. xxiv*d*, fig. 7. (Pantolestes.)
Matthew, W. D. 1899 A, p. 32. (Trigonolestes.)
Roger, O. 1896 A, p. 199. (Pantolestes.)
Trouessart, E. L. 1898 A, p. 800. (Pantolestes.)
Eocene (Wasatch); Wyoming.

Trigonolestes secans Cope.

Cope, E. D. 1881 D, p. 187. (Pantolestes.)
1882 E, p. 150. (Pantolestes.)
1884 O, pp. 717, 725, pl. xxv*a*, fig. 6. (Pantolestes.)
Matthew, W. D. 1899 A, p. 36. (Trigonolestes?.)
Roger, O. 1896 A, p. 199. (Pantolestes.)
Trouessart, E. L. 1898 A, p. 800. (Pantolestes.)
Eocene (Wind River); Wyoming, Colorado.

HOMACODONTIDÆ.

Marsh, O. C. 1894 L, p. 263.
Matthew, W. D. 1899 A, pp. 37, 48, part.
Scott, W. B. 1899 A, p. 84.

HOMACODON Marsh. Type *H. vagans* Marsh.

Marsh, O. C. 1872 G, p. 126.
Ameghino, F, 1896 A, p. 444.
Cope, E. D. 1873 E, p. 608.
1894 E, p. 868.
Flower and Lydekker 1891 A, p. 294.
Marsh, O. C. 1877 E, p. 364.
1894 L, p. 263.
Pavlow, M, 1900 A, p. 59.
Scott, W. B. 1890 A, pp. 485, 486.
Scott, W. B. 1891 A, pp. 9, 46.
1898 C, p. 81.
1899 A, pp. 46, 65.
Trouessart, E. L. 1898 A, p. 800. (Syn. of Pantolestes.)
Woodward, A. S. 1898 B, p. 341.
Wortman, J. L. 1898 A, pp. 94, 98, 101, 102, 135.
Zittel, K. A. 1893 B, p. 361.

Homacodon priscus Marsh.

Marsh, O. C. 1894 L, p. 261, fig. 3.
Roger, O. 1896 A, p. 199. (Pantolestes.)
Trouessart, E. L. 1898 A, p. 800. (Pantolestes.)
Eocene; Wyoming, New Mexico.

Homacodon pucillus Marsh.

Marsh, O. C. 1894 L, p. 261, fig. 4.
Roger, O. 1896 A, p. 199. (Pantolestes.)
Trouessart, E. L. 1898 A, p. 800. (Pantolestes.)
Eocene; Wyoming, New Mexico.

Homacodon vagans Marsh.

Marsh, O. C. 1872 G, p. 126.
Cope, E. D. 1894 E, p. 868.
King, C. 1878 A, p. 404.
Marsh, O. C. 1894 L, p. 262, figs. 5-8.
Matthew, W. D. 1899 A, p. 48.
Roger, O. 1896 A, p. 199. (Pantolestes.)
Scott, W. B. 1891 A, p. 486.
Trouessart, E. L. 1898 A, p. 800. (Pantolestes.)
Woodward, A. S. 1898 A, p. 342, fig. 196.
Eocene (Bridger); Wyoming.

NANOMERYX Marsh. Type *N. caudatus* Marsh.

Marsh, O. C. 1894 L, p. 263.

Nanomeryx caudatus Marsh.

Marsh, O. C. 1894 L, p. 263, figs. 9, 10.
Cope, E. D. 1894 E, p. 868.
Matthew, W. D. 1899 A, p. 48.
Roger, O. 1896 A, p. 199.
Trouessart, E. L. 1898 A, p. 801.
Eocene (Bridger); Wyoming.

BUNOMERYX Wort. Type not indicated; *B. elegans*, being figured, may be taken.

Wortman, J. L. 1898 A, p. 97.
Scott, W. B. 1899 A, p. 84.

Bunomeryx elegans Wort.

Wortman, J. L. 1898 A, p. 100, fig. 2.
Matthew, W. D. 1899 A, p. 50.
Trouessart, E. L. 1899 A, p. 1348.
Eocene (Uinta); Utah.

Bunomeryx montanus Wort.

Wortman, J. L. 1898 A, p. 97.
Matthew, W. D. 1899 A, p. 50.
Trouessart, E. L. 1899 A, p. 1348.
Eocene (Uinta); Utah.

HELOHYIDÆ.

Marsh, O. C. 1877 E, p. 364.
Cope, E. D. 1892 S, p. 411.
Marsh, O. C. 1892 C, p. 352.
Matthew, W. D. 1899 A, p. 48. (Homacodontidæ, in part.)
Scott, W. B. 1890 A, p. 485.

HELOHYUS Marsh. Type *H. plicodon* Marsh.

Marsh, O. C. 1872 I, p. 207.
Cope, E. D. 1873 D, p. 3. ("Thinotherium," of Marsh.)
1892 S, p. 411.
1894 E, p. 868. (Syn. of Phenacodus.)
Marsh, O. C. 1872 I, p. 208. (Thinotherium, type *T. validum;* not Thinotherium Cope, 1870.)
1877 E.
1892 C, p. 351.
1894 L, p. 264.
Schlosser, M. 1886 B, p. 12. (Syn.? of Phenacodus.)
Scott, W. B. 1889 C, p. 76.
1890 A, pp. 486, 502.
1890 B, p. 366.
Wilckens, M. 1885 B, p. 303.
Wortman, J. L. 1898 A, p. 94.
Zittel, K. A. 1893 B, p. 220. (Thinotherium Marsh.)

Helohyus lentus Marsh.

Marsh, O. C. 1871 D, p. 39. (Elotherium.)
Leidy, J. 1872 B, p. 365. (Elotherium.)
1873 B, p. 124. (Elotherium.)
Marsh, O. C. 1878, in King, C. 1878 A, p. 404. (Helohyus.)
1894 L, p. 265, fig. 16.
Matthew, W. D. 1899 A, p. 48.
Roger, O, 1896 A, p. 167. (Phenacodus?.)
Trouessart, E. L. 1898 A, p. 726. (Phenacodus.)
Eocene (Bridger); Wyoming.

Helohyus plicodon Marsh.

Marsh, O. C. 1872 I, p. 207.
1894 L, p. 264, figs. 11-14, 17.
Matthew, W. D. 1899 A, p. 48.
Roger, O. 1896 A, p. 166. (Phenacodus?.)
Scott, W. B. 1890 B, pl. xiv, fig. 14.
Eocene (Bridger); Wyoming.

Helohyus validus Marsh.

Marsh, O. C. 1872 I, p. 208. (Thinotherium.)
1894 L, p. 265, fig. 15.
Matthew, W. D. 1899 A, p. 48.
Roger, O. 1896 A, p. 166. (Phenacodus?.)
Eocene (Bridger); Wyoming.

EOHYIDÆ.

Marsh, O. C. 1894 L, p. 260.
Cope, E. D. 1894 E, p. 867.

EOHYUS Marsh. Type *E. distans* Marsh.

Marsh, O. C. 1894 L, p. 259.
Cope, E. D. 1894 E, p. 868.
Marsh, O. C. 1877 E. (No description.)
Matthew, W. D. 1899 A, p. 32, footnote.
Wilckens, M. 1885 B, p. 303. (No description.)

Eohyus distans Marsh.

Marsh, O. C. 1894 L, p. 259, fig. 1.
Matthew, W. D. 1899 A, p. 32.
Roger, O. 1896 A, p. 199.
Trouessart, E. L. 1898 A, p. 801.
Wortman, J. L. 1896 A, p. 101, footnote.
Eocene (Wasatch); New Mexico.

Eohyus robustus Marsh.

Marsh, O. C. 1894 L, p. 260.
Matthew, W. D. 1899 A, p. 32.
Roger, O. 1896 A, p. 199.
Trouessart, E. L. 1898 A, p. 801.
Eocene (Wasatch); New Mexico.

Superfamily ANTHRACOTHERIOIDEA Gill.

Gill, T. 1872 B, pp. 11, 83.
Cope, E. D. 1898 B, p. 130.
Owen, R. 1848 A, p. 116. (Anthracotheria.)

ANTHRACOTHERIIDÆ.

Blainville, H. M. D. 1864 A, iv, Y, p. 121, with plates.
Branco, W. 1897 A, p. 23.
Cope, E. D. 1884 H, p. 26. (Hyopotamidæ.)
1885 B, p. 489. (Hyopotamidæ.)
1888 X, pp. 1080, 1085.
Flower and Lydekker 1891 A, p. 292.
Gill, T. 1872 B, pp. 11, 83.
Haeckel, E. 1895 A, p. 554. (Anthracotherida.)
Kowalevsky, W. 1873 A. (Anthracotheriidæ, Hyopotamidæ.)
1874 A. (Hyopotamidæ.)
Leidy, J. 1869 A, p. 202.
1871 C, p. 355.
Lydekker, R. 1883 A, p. 147.
1885 C, p. 215.
Marsh, O. C. 1894 F, p. 92.
1894 K, p. 178. (Ancodontidæ.)
Meyer, H. 1856 B, pp. 61–66.
Nicholson and Lydekker 1889 A, p. 1324.
Osborn and Wortman 1894 A, p. 219.
Pavlow, M. 1900 A, p. 18.
Pomel, A. 1848 B, p. 321. ("Les Anthracotheriums.")
Roger, O. 1896 A, p. 199.
Rütimeyer, L. 1857 A. ("Anthracotherien.")
Schlosser, M. 1886 A, p. 255.
1886 B, p. 79.
Scott, W. B. 1890 B, p. 392. (Hyopotamidæ.)
Steinmann and Döderlein 1890 A, p. 792.
Teller, F. 1884 A.
Trouessart, E. L. 1898 A, p. 801.
Woodward, H. 1898 B, p. 348.
Wortman, J. L. 1886 A, p. 485.
Zittel, K. A. 1893 B, p. 325.

ANTHRACOTHERIINÆ.

Roger, O. 1896 A, p. 199.
Trouessart, E. L. 1898 A, p. 801.
Zittel, K. A. 1893 B, p. 327.

ANTHRACOTHERIUM Cuv. Type *A. magnum* Cuv.

Cuvier, G. 1822, Oss. Foss., iii, p. 396.
Bayle, E. 1855 A.
Blainville, H. M. D. 1864 A, iv, Y, p. 121, pls. i–iii.
Bronn, H. G. 1838 A, p. 1225; pl. xlvi, fig. 4.
Cuvier, G. 1834 A, p. 464, pl. 161.
Filhol, H. 1891 B, p. 89.
Flores, E. 1897 A, p. 92.
Gaudry, A. 1878 B, pp. 42, 94.
Gervais, P. 1859 A, p. 189.
Hoernes, R. 1875 A.
1876 A.
1877 A.
Kowalevsky, W. 1873 A.
Lydekker, R. 1883 A, p. 148.
1885 C, p. 235.
Marsh, O. C. 1894 C, p. 409. (Heptacodon, type *H. curtus.*)
1894 F, p. 92. (Heptacodon.)
1894 K, p. 178. (Heptacodon.)
Meyer, H. 1834 A, p. 59.
1854 A.
Nicholson and Lydekker 1889 A, p. 1324.
Osborn and Wortman 1894 A, p. 222.
Owen, R. 1845 B, p. 567.
1848 A, p. 109.
Pavlow, M. 1900 A, p. 21.
Pictet, F. J. 1853 A, p. 332.
Pomel, A. 1847 A, pp. 203, 207.
1847 C, p. 381.
1848 B, p. 324.
1853 A, p. 89.
Renevier, E. 1879 A.
Rütimeyer, L. 1857 A.
1857 B.
1857 C.
Teller, F. 1884 A.
Woodward, A. S. 1898 B, p. 348.
Zittel, K. A. 1893 B, p. 327.

Anthracotherium curtum (Marsh.)

Marsh, O. C. 1894 C, p. 409. (Heptacodon.)
1894 K, p. 176, fig. 1. (Heptacodon.)
Matthew, W. D. 1899 A, p. 58.
Osborn and Wortman 1894 A, p. 221, figs. 6, 7 (A. curtum?); p. 223 (A. occidentale).
Roger, O. 1896 A, p. 200. (A. curtum, A. occidentale.)
Trouessart, E. L. 1898 A, p. 803. (A. curtum, A. occidentale.)
Oligocene (White River); South Dakota.

Anthracotherium gibbiceps (Marsh).

Marsh, O. C. 1894 K, p. 175, fig. 2. (Heptacodon.)
Matthew, W. D. 1899 A, p. 59.
Roger, O. 1896 A, p. 201.
Trouessart, E. L. 1898 A, p. 803.
Oligocene (White River); South Dakota?.

Anthracotherium karense Osb. and Wort.

Osborn and Wortman 1894 A, p. 222, fig. 8.
Matthew, W. D. 1899 A, p. 59.
Roger, O. 1896 A, p. 200.
Trouessart, E. L. 1898 A, p. 803.
Oligocene (White River); South Dakota.

OCTACODON Marsh. Type *O. valens* Marsh.

Marsh, O. C. 1894 F, p. 92.
1894 K, p. 178.
Trouessart, E. L. 1898 A, p. 801. (Syn. of Anthracotherium.)

Octacodon valens Marsh.

Marsh, O. C. 1894 F, p. 92, fig. 1.
1894 K, p. 178, fig. 6.
Matthew, W. D. 1899 A, p. 59. (Syn. of Anthracotherium karense.)
Roger, O. 1896 A, p. 201. (Anthracotherium.)
Trouessart, E. L. 1898 A, p. 103. (Anthracotherium.)
Oligocene (White River); South Dakota.

ELOMERYX Marsh. Type *Heptacodon armatus* Marsh.

Marsh, O. C. 1894 K, p. 176.

Elomeryx armatus Marsh.

Marsh O. C. 1894 F, p. 93, fig. 2. (Heptacodon.)
1894 K, p. 176, figs. 3, 4.
Matthew, W. D. 1899, A, p. 59. (Syn. of Anthracotherium karense.)
Roger, O. 1896 A, p. 201.
Trouessart, E. L. 1898 A, p. 804.
Oligocene (White River); South Dakota.

Elomeryx mitis Marsh.

Marsh, O. C. 1894 K, p. 177, fig. 5.
Matthew, W. D. 1899 A, p. 59. (Anthracotherium.)
Roger, O. 1896 A, p. 201.
Trouessart, E. L. 1898 A, p. 804.
Oligocene (White River); South Dakota?.

ANCODON Pomel. Type *A. velaunum* Pomel.

Pomel A., 1847, Arch. Sci. Phys. et Nat., Genève, v, p. 207.

Unless otherwise indicated, the following authors use the name *Hyopotamus* for this genus. *Ancodon* antedates it. *Ancodon* was afterwards emended into *Ancodus*.

Aymard, A., 1848, Ann. Soc. Agri. et Sci., du Puy, xii. (Bothriodon, type *B. platyrhinchus.*)
Cope, E. D. 1887 A, p. 383.
1888 X, p. 1086.
1889 C, p. 163.
Filhol, H. 1882 A, p. 85. (Ancodus.)
Gaudry, A. 1878 B, p. 94.
Gervais, P. 1859 A, p. 191.
Kowalevsky, W. 1874 A.
Leidy, J. 1869 A, p. 202.
1871 C, p. 355.
Lydekker, R. 1883 A, p. 154.
1885 A, p. 218.
Major, Fors. 1873 A, p. 101.
Marsh, O. C. 1894 K, p. 178. (Ancodus.)
Nicholson and Lydekker 1889 A, p. 1325.
Owen, R. 1848 A, p. 104. (Hyopotamus, type *H. bovinus.*)
Pavlow, M. 1900 A, p. 19.
Pomel, A. 1848 B, p. 322. (Ancodus.)
1853 A, p. 91. (Ancodus.)
Rütimeyer, L. 1891 A, p. 56.
Schlosser, M. 1886 B, p. 79.
Scott, W. B. 1890 A, p. 488,
1894 C.
1894 D. (Ancodus.)
1894 E. (Ancodus.)
Steinmann and Döderlein 1890 A, p. 794.
Trouessart, E. L, 1898 A, p. 804.
Woodward, A. S. 1898 B, p. 349.
Wortman, J. L. 1893 A.
Zittel, K. A. 1893 B, p. 329. (Ancodus.)

Ancodon americanus (Leidy).

Leidy, J. 1856 D, p. 59. (Hyopotamus.)
Hayden, F. V. 1858 B, p. 157. [Chæropotamus (Hyopotamus).]
King, C. 1878 A, p. 411. (Hyopotamus.)
Leidy, J. 1856 B, p. 422. (Hyopotamus.)
1857 C, p. 89. [Chæropotamus (Hyopotamus).]
1869 A, pp. 202, 389, pl. xxi, figs. 1-6. (Hyopotamus.)
1871 C, p. 355. (Hyopotamus.)

Marsh, O. C. 1890 D, p. 524. (Hyopotamus deflectus.)
1894 K, p. 178, fig. 7. (Ancodus deflectus.)
Matthew, W. D. 1899 A, p. 59. (Hyopotamus americanus, H. deflectus.)
Osborn and Wortman 1894 A, p. 219, fig. 6, A. (Hyopotamus.)
Roger, O. 1896 A, p. 202. (Hyopotamus americanus, H. deflectus.)
Scott, W. B. 1894 E, p. 461, pl. xxxiii, figs. 2, 3 (Ancodus americanus); p. 461 (A. deflectus).
Trouessart, E. L. 1898 A, p. 806. (Hyopotamus americanus, H. deflectus.)
Oligocene (White River); South Dakota.

An examination of the type of Professor Marsh's *Hyopotamus deflectus* shows that the character on which the species was based holds good on only one side.

Ancodon brachyrhynchus (Osb. and Wort.).

Osborn and Wortman 1894 A, p. 220, fig. 6 B. (Hyopotamus.)
Matthew, W. D. 1899 A, p. 59. (Hyopotamus.)
Roger, O. 1896 A, p. 202. (Hyopotamus.)
Scott, W. B. 1894 D, p. 492. (Ancodus.)
1894 E, pl. xxiii, fig. 1; pl. xxiv, figs. 5-8. (Ancodus.)
Trouessart, E. L. 1898 A, p. 806. (Hyopotamus.)
Woodward, A. S. 1898 B, p. 350, fig. 200. (Hyopotamus.)
Oligocene (White River); South Dakota.

Ancodon rostratus Scott.

Scott, W. B. 1894 E, appendix, p. 536. (Ancodus.)
Oligocene (White River); South Dakota.

Superfamily *SUOIDEA.*

Cope, E. D. 1885 B, p. 482. (Bunodonta.)
1887 B, p. 378. (Bunodonta.)
1898 B, p. 130.
Flower, W. H. 1873 A. (Suina.)
1874 A. (Suina.)
1876 B, xiii, p. 328. (Suina.)
1883 D, p. 430. (Bunodonta.)
1885 A. (Suina.)
Flower and Lydekker 1891 A, p. 278. (Suina.)
Gray, J. E. 1868 A, p. 22. (Suina.)
1869 A, p. 238. (Suina.)
Kowalevsky, W. 1873 A, p. 152. (Bunodonta, in part.)
Lydekker, R. 1883 A. (Suina, Bunodontia, in part.)
1884 C. (Suina, Bunodontia, in part.)
Marsh, O. C. 1877 E. (Bunodonta.)
Tomes, C. S. 1898 A, p. 392. (Suina.)

SUIDÆ.

Baur, G. 1884 F, p. 598.
Blainville, H. M. D. 1864 A, iv, AA, p. 105.
Branco, W. 1897 A, p. 23.
Cope, E. D. 1887 B, pp. 378, 384.
1888 X, pp. 1080, 1090.
Cope and Wortman 1884 A, p. 16.
Coues, E. 1878 A.
Cuvier, G. 1834 A, p. 221 *et seq.*, with plates.
Flower, W. H. 1873 A.
Flower and Lydekker 1891 A, p. 281.
Garrod, A. H. 1877 A.
Gray, J. E. 1868 A.
1869 A, p. 327.
Haeckel, E. 1895 A, p. 555. (Suida.)
Huxley, T. H. 1870 A, p. 440.
1872 A, p. 313.
Leidy, J. 1871 C, p. 352.
Lydekker, R. 1884 C, p. 49.
1885 C, p. 250.
Nicholson and Lydekker 1889 A, p. 1318.
Osborn, H. F. 1883 A, p. 34.
Owen, R. 1845 B, p. 543.
Parker, W. K. 1874 B.
Roger, O. 1896 A, p. 202.
Rütimeyer, L. 1857 B. ("Schweine.")
1862 B. ("Schweine.")
Schlosser, M. 1886 A, p. 255.
1886 B, p. 82.
1890 C, p. 273.
Schmidt, O. 1886 A, p. 137.
Slade, D. D. 1893 A.
Smith, J. 1895 A, p. 340.
Stehlin, H. G. 1899 A.
Steinmann and Döderlein 1890 A, p. 794.
Taeker, J. 1892 A.
Trouessart, E. L. 1898 A, p. 808.
Turner, H. N. 1848 A.
Weyhe, —— 1875 A, p. 120.
Wilckens, M. 1885 B.
Woodward, A. S. 1898 B, p. 341.
Zittel, K. A. 1893 B, p. 331.

ACHÆNODONTINÆ.

Cope, E. D. 1887 B, p. 378. (Elotheriidæ.)
1888 X, p. 1089. (Elotheriinæ.)
Marsh, O. C. 1893 D, p. 410. (Elotheriidæ.)
1894 B, p. 408. (Elotheriidæ.)
1894 H. (Elotheriidæ.)
Osborn, H. F. 1893 D, p 41. (Elotheriidæ.)
Roger, O. 1896 A, p. 203.
Stehlin, H. G. 1899 A, p. 123. ("Elotherien.")
Trouessart, E. L. 1898 A, p. 808. (Achænodontinæ.)
Zittel, K. A. 1893 B, p. 334. (Achænodontinæ.)

Possibly the subfamily name *Elotheriinæ* has priority.

ACHÆNODON Cope. Type *A. insolens* Cope.

Cope, E. D. 1873 D, p. 2.
Ameghino, F. 1896 A, p. 144.
Cope, E. D. 1874 B, p. 457.
1883 I, p. 77.
1883 II, p. 969.
1884 O, pp. 259, 342, 738.
1884 Z, p. 718.
1885 K, p. 469.
1887 S. p. 261.
Lydekker, R. 1885 E, p. 470.
Nicholson and Lydekker 1889 A, p. 1323.
Osborn, H. F. 1883 A, p. 26.
Schlosser, M. 1885 A, p. 684.
1886 B, p. 39.
1887 B, p. 220.
Zittel, K. A. 1893 B, p. 234.

Achænodon insolens Cope.

Cope, E. D. 1873 D, p. 2.
1874 B, pp. 457, 463.
Cope, E. D. 1874 M, p. 78, fig. 5.
1882 JJ, p. 584.
1884 O, p. 343, pls. lvii, lviia.
1885 K, p. 470, fig. 17.
Matthew, W. D. 1899 A, pp. 48, 50.
Osborn, H. F. 1883 A, p. 24.
1895 A, p. 105.
Roger, O. 1896 A, p. 203.
Trouessart, E. L. 1898 A, p. 808.
Eocene (Bridger); Wyoming: (Uinta); Utah.

Achænodon robustus Osb.

Osborn, H. F. 1883 A, p. 24, pl. vi.
Cope, E. D. 1885 K, p. 471, fig. 18.
Matthew, W. D. 1899 A, p. 48.
Osborn, H. F. 1895 A, p. 103.
Roger, O. 1896 A, p. 203.
Trouessart, E. L. 1898 A, p. 808.
Zittel, K. A. 1893 B, p. 335, fig. 270.
Eocene (Bridger); Wyoming.

PARAHYUS Marsh. Type *P. vagus* Marsh.

Marsh, O. C. 1876 H, p. 402.
Cope, E. D. 1894 E, p. 868.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1323.
Osborn, H. F. 1883 A, pp. 23, 24.
1893 D, p. 41.
Trouessart, E. L. 1898 A, p. 808. (Syn. of Achænodon.)
Wilckens, M. 1885 B, p. 305.
Zittel, K. A. 1893 B, p. 334. (Syn.? of Achænodon.)

Parahyus aberrans Marsh.

Marsh, O. C. 1894 L, p. 261, fig. 2.
Matthew, W. D. 1899 A, p. 34.
Roger, O. 1896 A, p. 203. (Achænodon.)
Trouessart, E. L. 1898 A, p. 808. (Achænodon.)
Eocene (Bridger); Wyoming.

Parahyus vagus Marsh.

Marsh, O. C. 1876 H, p. 402.
King, C. 1878 A, p. 377. (P. vagans.)
Matthew, W. D. 1899 A, p. 34.
Osborn, H. F. 1883 A, p. 24 [Achænodon (Parahyus).]
Roger, O. 1896 A, p. 203. (Achænodon.)
Scott, W. B. 1898 A, p. 323. (Achænodon.)
Trouessart, E. L. 1898 A, p. 808. (Achænodon.)
Wilckens, M. 1885 B, p. 305.
Eocene (Bridger); Wyoming.

PROTELOTHERIUM Osb. Type *Elotherium uintense* Osb.

Osborn, H. F. 1895 A, p. 105.

Protelotherium uintense Osb.

Osborn, H. F. 1895 A, p. 102, figs. 16, 17 (Elotherium); p. 105 (Protelotherium).
Matthew, W. D. 1899 A. p. 50.
Roger, O. 1896 A, p. 203. (Elotherium.)
Scott, W. B. 1898 A, p. 323. (Achænodon.)
Trouessart, E. L. 1898 A, p. 808.
Eocene (Uinta); Utah.

ELOTHERIUM Pomel. Type *E. magnum* Pomel.

Pomel, A. 1847 B, p. 307.
Aymard, A., 1848, Sci. et Bell. Lett. du Puy, xii, p. 240. (Entelodon.)
Cope, E. D. 1874 B, p. 504. (Pelonax, type *P. ramosus.*)
1879 B, p. 59. (Boöchœrus, type *B. humerosus.*)
1884 H, p. 22.
1885 B, p. 483.
1888 X, p. 1088.
1889 C. (Elotherium, Boöchœrus.)
Filhol, H. 1882 A, p. 190.
Flower, W. H. 1873 A.
Flower and Lydekker 1891 A, p. 292.
Gaudry, A, 1877 A. (Entelodon.)
1878 B, p. 92. (Entelodon.)
Gervais, P. 1859 A, p. 194. (Entelodon.)
Greene, F. V. 1853 A. (Archæotherium.)
Grinnell and Dana 1876 A.
Hoernes, R. 1892 A. (Entelodon.)
Kowalevsky, W. 1873 A, p. 258. (Entelodon,)
1876 A, p. 415. (Entelodon.)
Leidy, J. 1850 A, p. 90. (Archæotherium, type *A mortoni* Leidy.)
1851 J. (Arctodon.)
1852 J, p. 558. (Archæotherium.)
1852 L, p. 64. (Archæotherium.)
1854 A, pp. 57, 114. (Archæotherium.)
1869 A, pp. 174, 388.
1871 C, p. 353.
Lydekker, R. 1885 C, p. 249.
1896 B, p. 161.

Marsh, O. C. 1877 E.
1894 B, pl. ix.
1894 H.
Nicholson and Lydekker 1889 A, p. 1323.
Osborn, H. F. 1883 A, p. 23. (Entelodon.)
Pictet, F. J. 1853 A, p. 328.
Pomel, A., 1847, Bull. Soc. Géol. France, iv, p. 1083.
1848 B, p. 325.
1853 A, p. 88.
Schlosser, M. 1886 B, p. 80. (Entelodon.)
Scott, W. B. 1884 B.
1896 A.
1898 A.
Stehlin, H. G. 1899 A, pp. 121, 122.
Steinmann and Döderlein 1890 A, p. 793. (Entelodon.)
Trouessart, E. L. 1898 A, p. 808.
Wilckens, M. 1885 B, pp. 210, 216, 217.
Woodward, A. S. 1898 B, p. 343.
Zittel, K. A. 1893 B, p. 335 (Elotherium); p. 337 (Boöchœrus).

Elotherium clavum Marsh.

Marsh, O. C. 1893 D, p. 409, pl. ix, fig. 1.
1897 C, p. 523, fig. 97. (Entelodon.)
Matthew, W. D. 1899 A, p. 59.
Roger, O. 1896 A, p. 204.
Trouessart, E. L. 1898 A, p. 810.
Oligocene (White River); South Dakota?, Colorado.

Elotherium coarctatum Cope.

Cope, E. D. 1889 O, p. 629.
1886 U, p. 84. (E. mortoni.)
1891 A, p. 20, pl. xiv, fig. 3. (E. arctatum.)
Matthew, W. D. 1899 A, p. 59. (E. arctatum.)
Roger, O. 1896 A, p. 204. (E. arctatum.)
Oligocene (White River); Northwest Territory, Canada.

Elotherium crassum Marsh.

Marsh, O. C. 1873 H, p. 487,
Cope, E. D. 1874 B, p. 504. (Pelonax?.)
King, C. 1878 A, p. 411.
L. P. B. 1885 A, p. 193, fig. 27.
Lydekker, R. 1896 B, p. 162, fig. 35.
Marsh, O. C. 1884 F, fig. 75.
1885 B, fig. 108.
1893 D, p. 408, pl. viii.
1894 B, pl. ix.
1894 H, pl. x.
1897 C, pl. xxx. (Entelodon.)
Matthew, W. D. 1899 A, p. 59.
Roger, O. 1896 A, p. 204.
Stehlin, H. G. 1899 A, p. 123.
Trouessart, E. L. 1898 A, p. 809.
Woodward, A. S. 1898 B, p. 344, fig. 197.
Zittel, K. A. 1893 B, p. 337, fig. 373.
Oligocene (White River); South Dakota, Colorado?.

Elotherium humerosum (Cope).

Cope, E. D. 1879 B, p. 59. (Boöchœrus.)
1879 H. p. 131. (Boöchœrus.)
Matthew, W. D. 1899 A, p. 64. (Boöchœrus.)
Roger, O. 1896 A, p. 204. (Boöchœrus.)
Trouessart, E. L. 1898 A, p. 810. (Boöchœrus.)
Wortman, J. L. 1898 A, p. 120, footnote.
Miocene (John Day); Oregon.
Probably identical with *E. imperator*.

Elotherium imperator Leidy.

Leidy, J. 1873 B, pp. 217, 320 (E. imperator); pl. ii, figs. 3, 4 (E. superbum); pl. vii, fig. 2 (E. imperator).
Cope, E. D. 1874 B, p. 505. (E. superbum.)
1879 B, p. 58.
1888 X, p. 1090.
Leidy, J. 1870 P, p. 112. (E. superbum.)
Matthew, W. D. 1899 A, p. 63.
Scott, W. B. 1898 A.
Trouessart, E. L. 1898 A, p. 809. (Syn. of E. superbum.
Miocene (John Day); Oregon.

Elotherium ingens Leidy.

Leidy, J. 1856 J, p. 164. (Entelodon.)
1857 D, p. 175. (Elotherium.)
1858 B, p. 157. (Entelodon.)
1869 A, pp. 192, 388, pl. xxvii, figs. 8–11.
1870 P, p. 112.
1871 C, p. 358.
1873 B, p. 320.
Matthew, W. D. 1899 A, p. 59.
Scott, W. B. 1896 A.
1898 A, pl. xvii; pl. xviii, figs. 3–12.
Trouessart, E. L. 1898 A, p. 809. (Syn. E. robustum.)
Oligocene (White River); South Dakota.

Elotherium mortoni Leidy.

Leidy, J. 1850 A, p. 90. (Archæotherium.)
Ami, H. M. 1891 A.
Cope, E. D. 1885 H. (Entelodon.)
1886 U, p. 84.
1888 X, p. 1089.
1889 I, p. 155.
Dawkins, W. B. 1870 A. (Archæotherium.)
Greene, F. V. 1853 A, p. 66. ("Archæotherium.")
Hayden, F. V. 1858 B, p. 157.
Hoernes, R. 1892 A. (Entelodon.)
King, C. 1878 A, p. 411.
Leidy, J. 1851 J, p. 278. ("Arctodon.")
1852 J, p. 558, pl. x, figs. 1–3; pl. xi, fig. 1 (Archæotherium mortoni); p. 572 (A. robustum).
1852 L, p. 64 (Archæotherium mortoni); p. 65 (Arctodon vetustum).
1853 D, p. 392. (Entelodon.)
1854 A, pp. 57, 114, pls. viii, ix; pl. x, figs. 1–7 (Archæotherium mortoni); pp. 66, 114, pl. x, figs. 8–13 (A. robustum).
1854 E, p. 157. (Entelodon.)
1857 D, p. 175.
1869 A, pp. 175, 388, pl. xvi.
1871 C, p. 353.
1873 B, pp. 125, 320, pl. vii, figs. 28, 29.
Matthew, W. D. 1899 A, p. 59.
Roger, O. 1896 A, p. 204. (E. mortoni, E. robustum.)
Scott, W. B., 1898 A, pl. xviii, figs. 1, 2.
Scott and Osborn 1887 B, p. 156. (Entelodon.)
Trouessart, E. L. 1898 A, p. 809.
Wortman, J. L. 1893 A, p. 97.

Zittel, K. A. 1893 B, p. 336, fig. 271.
Oligocene (White River); South Dakota, Nebraska, Colorado.

Elotherium ramosum Cope.

Cope, E. D. 1874 P, p. 27.
1874 B, pp. 463, 504. (Pelonax.)
1883 F, p. 217.
1888 X, p. 1089.
Matthew, W. D. 1899 A, p. 59.
Osborn, H. F. 1896 C, pp. 713, 715, illus. 9.
1898 Q, p. 16.
Roger, O. 1896 A, p. 204.
Trouessart, E. L. 1898 A, p. 809.
Oligocene (White River); Colorado, North Dakota.

Elotherium superbum Leidy.

Leidy, J. 1868 B.
Cope, E. D. 1874 B, p. 505.
Dana, J. D. 1879 A, p. 233.
King, C. 1878 A, p. 411.
Leidy, J. 1869 A, p. 388.
1871 C, p. 353.
Roger, O. 1896 A, p. 204.
Trouessart, E. L. 1898 A, p. 809.
Whitney, J. D. 1879 A, p. 244.
Miocene; California.

AMMODON Marsh. Type *A. leidyanum* Marsh.

Marsh, O. C. 1893 D, p. 409.
Trouessart, E. L. 1898 A, p. 808. (Syn. of Elotherium.)

Ammodon bathrodon Marsh.

Marsh, O. C. 1874 C, p. 534. (Elotherium.)
King, C. 1878 A, p. 411. (Elotherium.)
Marsh, O. C. 1893 D, p. 410, pl. ix, fig. 4.
Matthew, W. D. 1899 A, p. 59. (Elotherium.)
Roger, O. 1896 A, p. 204. (Elotherium.)
Trouessart, E. L. 1898 A, p. 808. (Elotherium.)
Oligocene (White River); South Dakota?.

Ammodon leidyanus Marsh.

Marsh, O. C. 1893 D, p. 409, pl. ix.
Cope, E. D. 1869 N, p. 740. (Elotherium.)
Leidy, J. 1869 A, p. 388. (Elotherium.)
Marsh, O. C. 1871 F, p. 10. (Elotherium; no description.)
1874 C, p. 534. (Elotherium; no description.)
Roger, O. 1896 A, p. 204. (Elotherium.)
Oligocene (White River); Colorado?.
Trouessart, E. L. 1898 A, p. 808. (Elotherium.)
Miocene; New Jersey.

Not any of the literature of this species previous to 1893 contains an adequate description.

Ammodon potens Marsh.

Marsh, O. C. 1893 D, p. 410.
1897 C, p. 527.
Matthew, W. D. 1899 A, p. 59. (Elotherium.)
Roger, O. 1896 A, p. 204. (Elotherium.)
Trouessart, E. L. 1898 A, p. 808. (Elotherium.)

HYOTHERIINÆ.

Cope, E. D. 1894 E, p. 869. (Leptochœridæ.)
Marsh, O. C. 1894 L, p. 273. (Leptochœridæ.)
Roger, O. 1896 A, p. 204.
Trouessart, E. L. 1898 A, p. 810.
Zittel, K. A. 1893 B, p. 337.

HYOTHERIUM Meyer. Type *H. sömereringii* Meyer.

Meyer, H. 1834 A, p. 43.
Bronn, H. G. 1838 A, p. 1222, pl. xlvi, fig. 7.
Cope and Wortman, 1884 A, p. 17.
Filhol, A. 1881 A.
1891 A, p. 207.
Gaudry, A. 1878 B, p. 70.
Gervais, P. 1859 A, p. 181.
Lydekker, R. 1884 C, p. 91.
1885 C, p. 253.
Meyer, H. 1841 A.
Peters, K. 1869 B.
Pictet, F. J. 1853 A, p. 333.
Stehlin, H. G. 1899 A, pp. 44, 135, 235, 313.
Wilckens, M. 1885 B, p. 337.
Woodward, A. S. 1898 B, p. 343.
Zittel, K. A. 1893 B, p. 341.

Hyotherium americanum Scott and Osb.

Scott and Osborn 1887 B, p. 155.
Cope, E. D. 1888 E, p. 66.
Matthew, W. D. 1899 A, p. 60. (Bothrolabis.)
Roger, O. 1896 A, p. 207. (Bothrolabis.)
Stehlin, H. G. 1899 A, p. 113.
Trouessart, E. L. 1898 A, p. 815. (Bothrolabis.)
Oligocene (White River); South Dakota?

Hyotherium platyops Cope.

Cope, E. D. 1881 C, p. 174.
Lydekker, R. 1884 C, p. 93.
Matthew, W. D. 1899 A, p. 60. [Bothrolabis (Palæochœrus).]
Roger, O. 1896 A, p. 207. (Bothrolabis.)
Trouessart, E. L. 1898 A, p. 815. (Bothrolabis.)
Oligocene (White River); South Dakota.

PERCHŒRUS Leidy. Type *Palæochœrus probus* Leidy.

Leidy, J. 1869 A, p. 194.
Cope, E D. 1879 A, p. 44. (Thinohyus.)
1879 E, p. 374. (Thinohyus.)
1884 O, p. 37. (Thinohyus.)
1887 B, p. 384. (Thinohyus.)
1888 E, p. 62. (Thinohyus.)
1894 E, p. 869. (Thinohyus.)
Cope and Wortman 1884 A, p. 17. (Thinohyus.)
Leidy, J. 1871 C, p. 353.
Marsh, O. C. 1875 B, p. 248. (Thinohyus type *T. lentus* Marsh.)
1877 E. (Perchœrus, Thinohyus.)
1894 L, p. 271.
Nicholson and Lydekker 1889 A, p. 1322. (Perchœrus, Thinohyus.)
Schlosser, M. 1886 B, p. 88.
Scott, W. B. 1892 A, p. 438. (Perchœrus, Thinohyus.)
Stehlin, H. G. 1889 A, p. 112. (Perchœrus); p. 113 (Tinohyus).
Wilckens, M. 1885 B, p. 304.
Zittel, K. A. 1893 B, p. 342. (Perchœrus, Thinohyus.)

Perchœrus antiquus Marsh.

Marsh, O. C. 1893 D, p. 411, pl. x, fig. 1. [Perchœrus (Dicotyles).]
1870 I, p. 11. (Dicotyles antiquus; no description.)
1894 L, p. 271, fig. 28. (Thinohyus.)
Matthew, W. D. 1899 A, p. 60. (Perchœrus.)
Roger, O. 1896 A, p 207. (Thinohyus.)
Stehlin, H. G. 1899 A, p. 114. (Tinohyus.)
Trouessart, E. L. 1898 A, p. 815 (Perchœrus); p. 816 (Thinohyus.)
Miocene; New Jersey.

Perchœrus lentus (Marsh).

Marsh, O. C. 1875 B, p. 248 (Thinohyus.)
Cope, E. D. 1879 E, p. 375 (Thinohyus.)
King, C. 1871 A, p. 424. (Thinohyus.)
Marsh, O. C. 1894 L, p. 271, fig. 26. (Thinohyus.)
Matthew, W. D. 1899 A p. 64. (Thinohyus.)
Roger, O. 1896 A, p. 207. (Thinohyus)
Scott, W. B. 1892 A, p. 438, fig 8^{8}. (Thinohyus.)
Stehlin, H. G. 1899 A, p. 114 (Tinohyus); p. 193. (Thinohyus.)
Trouessart, E. L. 1898 A, p. 815. (Thinohyus.)
Miocene (John Day); Oregon.

Perchœrus nanus (Marsh).

Marsh, O. C. 1894 L, p. 271, fig. 28. (Thinohyus.)
Matthew, W. D. 1899 A, p. 60. (Thinohyus.)
Roger, O. 1896 A, p. 207. (Thinohyus.)
Stehlin, H. G. 1899 A, p. 113 (Tinohyus); pp. 193, 273.
Trouessart, E. L. 1898 A, p. 816. (Thinohyus.)
Oligocene (White River); South Dakota.

Perchœrus probus Leidy.

Leidy, J. 1856 J, p. 165. (Palæochœrus.)
Hayden, F. V. 1858 B, p. 157. (Palæochœrus.)
King, C. 1878 A, p. 411.
Leidy, J. 1869 A, pp. 194, 389, pl. xxi, figs. 20-27.
1871 C, p. 353.
Matthew, W. D. 1899 A, p. 60.
Roger, O. 1896 A, p. 207.
Scott, W. B. 1892 A, p. 438, fig. 8^{8}.
Stehlin, H. G. 1899 A, pp. 112, 193.
Wilckens, M. 1885 B, p. 305.
Oligocene (White River); South Dakota.

Perchœrus robustus (Marsh).

Marsh, O. C. 1894 F, p. 94. (Thinohyus.)
Matthew, W. D. 1899 A, p. 60. (Thinohyus.)
Stehlin, H. G. 1899 A, p. 114 (Tinohyus); p. 193
Trouessart, E. L. 1898 A, p. 816. (Thinohyus.)
Oligocene (White River); South Dakota.

Perchœrus socialis (Marsh).

Marsh, O. C. 1875 B, p. 249. (Thinohyus.)
Cope, E. D. 1879 B, p. 58. (Palæochœrus.)
King, C. 1878 A, p. 424. (Thinohyus.)
Marsh, O. C. 1894 L, p. 271, fig. 25. (Thinohyus.)
Matthew, W. D. 1899 A, p. 64. (Thinohyus.)
Stehlin, H. G. 1899 A, p. 113. (Tinohyus.)
Trouessart, E. L. 1898 A, p. 816. (Thinohyus.)
Miocene (John Day); Oregon.

LEPTOCHŒRUS Leidy. Type *L. spectabilis* Leidy.

Leidy, J. 1856 I, p. 88.
Cope, E. D. 1894 E, p. 869.
Leidy, J. 1869 A, p. 197.
1871 C, p. 354.
Nicholson and Lydekker 1889 A, p. 1323.
Schlosser, M. 1886 B, p. 85.
Scott, W. B. 1891 A, p. 46.
Zittel, K. A. 1893 B, p. 341.

Leptochœrus gracilis Marsh.

Marsh, O. C. 1894 L, p. 272, figs. 29, 30.
Matthew, W. D. 1899 A, p. 60.
Roger, O 1896 A, p. 206.
Oligocene (White River); South Dakota.

Leptochœrus spectabilis Leidy.

Leidy, J. 1856 I, p. 88.
Hayden, F. V. 1858 B, p. 157.
King, C. 1878 A, p. 411.
Leidy, J. 1869 A, pp. 197, 389, pl. xxi, figs. 14-19.
1871 C, p. 354.
Matthew, W. D. 1899 A, p. 59.
Roger, O 1896 A, p. 206.
Trouessart, E. L. 1898 A, p. 814.
Wilckens, M. 1885 B, p. 305.
Oligocene (White River); South Dakota.

NANOHYUS Leidy. Type *N. porcinus* Leidy.

Leidy, J. 1869 B, p. 65.
1869 A, p. 200.
1871 C, p. 354.
Scott, W. B. 1892 A, p. 441.
Stehlin, H. G. 1899 A, p. 221.

Nanohyus porcinus Leidy.

Leidy, J. 1869 B, p. 65.
1869 A, pp. 200, 389, pl. xxix, figs. 11, 12.
Leidy, J. 1871 C, p. 354.
Matthew, W. D. 1899 A, p. 60.
Roger, O. 1896 A, p. 207.
Stehlin, H. G. 1899 A, p. 113.
Trouessart, E. L. 1898 A, p. 815.
Wilckens, M. 1885 B, p. 306.
Oligocene (White River); South Dakota?.

CHÆNOHYUS Cope. Type *C. decedens* Cope.

Cope, E. D. 1879 E, p. 373.
1887 B, p. 384.
1888 E, p. 63.
1888 X, p. 1088.
Cope and Wortman 1884 A, p. 17.
Flower and Lydekker 1895 A, p. 291.
Nicholson and Lydekker 1889 A, p. 1321.
Stehlin, H. G. 1899 A, pp. 113, 193.
Zittel, K. A. 1893 B, p. 342.

Chænohyus decedens Cope.

Cope, E. D. 1879 E, p. 373.
1888 E, p. 63.
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 207.
Stehlin, H. G. 1899 A, pp. 114, 193.
Trouessart, E. L. 1898 A, p. 815.
Miocene (John Day); Oregon.

BOTHROLABIS Cope. Type *B. rostratus* Cope.

Cope, E. D. 1888 E, pp. 63, 66.
1888 X, p. 1088.
Flower and Lydekker 1891 A, p. 291.
Stehlin, H. G. 1899 A, pp. 113, 193, 272, 320.
Steinmann and Döderlein 1890 A, p. 796.
Zittel, K. A. 1893 B, p. 342.

Bothrolabis pristinus (Leidy).

Leidy, J. 1873 B, pp. 216, 319, pl. vii, figs. 13, 14. (Dicotyles.)
Cope, E. D. 1879 B, p. 58. (Palæochœrus.)
1888 E, pp. 66, 70.
Cope and Wortman, 1884 A, pp. 18, 19. (Dicotyles.)
Leidy, J. 1870 P, p. 112. ("Peccary.")
Matthew, W. D. 1899 A, p. 64.
Reinhardt, J. 1880 A, p. 30. (Dicotyles.)
Roger, O. 1896 A, p. 207.
Stehlin, H. G. 1899 A, pp. 114, 193, 273, 320.
Wilckens, M. 1885 B, p. 306. (Dycotyles.)
Miocene (John Day); Oregon.

Bothrolabis rostratus Cope.

Cope, E. D. 1888 E, pp. 66, 77.
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 207.
Stehlin, H. G. 1899 A, pp. 114, 193, 320.
Trouessart, E. L. 1898 A, p. 815.
Miocene (John Day); Oregon.

Bothrolabis subæquans Cope.

Cope, E. D. 1879 E, p. 374. (Palæochœrus.)
1888 E, pp. 66, 67.
Lydekker, R. 1884 C, p. 93. (Hyotherium)
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 207.
Stehlin, H. G. 1899 A, pp. 114, 193, 273, 320.
Trouessart, E. L. 1898 A, p. 815.
Miocene (John Day); Oregon.

Bothrolabis trichænus Cope.

Cope, E. D. 1879 E, p. 373. (Thinohyus.)
1879 B, p. 58. (Palæochœrus condoni.)
1888 E, pp. 66, 74.
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 207.
Stehlin, H. G. 1899 A, pp. 114, 193, 273, 320.
Trouessart, E. L. 1898 A, p. 815.
Miocene (John Day); Oregon.

TAYASSUINÆ.

The name hitherto employed for this subfamily has been *Dicotylinæ*.

Branco, W. 1897 A, p. 23.
Cope, E. D. 1888 E.
1888 X, p 1088.
1889 G, p. 134.
Cope and Wortman 1884 A, pp. 16, 17.
Flower and Lydekker 1891 A, p. 289. (Dicotylidæ.)
Gill, T. 1872 B, pp. 11, 83. (Dicotylidæ.)
Gray, J. E. 1868 A, p. 43. (Dicotylidæ.)
1869 A, p. 350. (Dicotylidæ.)
Leidy, J. 1853 G.
Roger, O. 1896 A, p. 207.
Trouessart, E. L. 1898 A, p. 816.
Zittel, K. A. 1893 B, p. 342.

TAYASSU Fischer. Type *Dicotyles torquatus* Cuv.

Fischer, G. 1814. Zoognosia, iii, pp. 284–289.

Unless otherwise indicated, the following authors use for this genus the name *Dicotyles*.

Ameghino, F. 1889 A, p. 573.
Baird, S. F. 1859 A, p. 627.
Burmeister, H. 1867 A, p. 236. ("Dicotyle Cuv.")
Cope, E. D. 1875 L, p. 21.
 1887 B, p. 384.
 1888 E, p. 62.
 1888 X, p. 1088.
 1889 G, p. 134. (Dicotyles; Mylohyus, type *D. nasutus*.)
 1899 A, p. 259. (Mylohyus.)
Cope and Wortman 1884 A, p. 17.
Cuvier, G., 1817, Règne Anim, i, p. 237.
Flower, W. H. 1873 A.
Flower and Lydekker 1891 A, p. 289.
Gervais and Ameghino 1880 A, p. 111. ("Dicotyle.")
Gray, J. E. 1868 A, p. 45.
 1869 A, p. 351.
Holmes, F. S. 1858 B.
Klippart, J. H. 1875 A.
Leidy, J. 1853 G.
 1857 J.
 1871 C, p. 352.
Lydekker, R. 1885 C, p. 250.
Nicholson and Lydekker 1889 A, p. 1322.
Owen, R. 1845 B, p. 559.
 1848 A, p. 123.
 1866 B, p. 458.
Palmer, T. S. 1899 A, p. 494. (Tayassu.)
Paulli, S. 1900 A, p. 198.
Reinhardt, J. 1880 A.
Rütimeyer, L. 1862 A, pp. 578, 584.
Schlosser, M. 1885 A, p. 685.
 1886 A, p. 255.
 1886 B, p. 89.
Scott, W. B. 1890 B.
 1891 A, p. 48, *et seq.*
 1892 A, p. 438.
Scott and Osborn 1890 B, p. 76.
Stehlin, H. G. 1899 A, pp. 111, 186, 208, 270, 318, 332.
Steinmann and Döderlein 1890 A, p. 796.
Trouessart, E. L. 1898 A, p. 817.
Turner, H. N. 1848 A, p. 70.
Wilckens, M. 1885 B, pp. 217, 307.
Woodward, A. S. 1898 B, p. 346.
Zittel, K. A. 1893 B, p. 342.

Tayassu hesperius (Marsh.)

Marsh, O. C. 1871 D, p. 42. (Dicotyles.)
Cope, E. D. 1879 E, p. 373. (Chænohyus?.)
Cope and Wortman 1884 A, p. 18. (Dicotyles.)
King, C. 1878 A, p. 443. (Dicotyles.)
Stehlin, H. G. 1899 A, pp. 115, 194. (Dicotyles.)
Trouessart, E. L. 1898 A, p. 815. (Bothrolabis subæquans.)
Wilckens, M. 1885 B, p. 306. (Dicotyles.)
 Pliocene; Oregon.

Tayassu nasutus (Leidy.)

Leidy, J. 1868 I, p. 230. (Dicotyles.)
Conrad, T. A. 1869 A, p. 363. (Dicotyles.)
Cope, E. D. 1869 E, p. 176. (Dicotyles.)
 1869 N, p. 741. (Dicotyles.)
 1888 X, p. 1089. (Dicotyles.)
 1889 G, p. 134. (Dicotyles, Mylohyus.)
 1899 A, p. 263. (Mylohyus.)
Cope and Wortman 1884 A, p. 18. (Dicotyles.)
Kindle, E. M. 1898 A, p. 485. (Dicotyles.)
Leidy, J. 1860 C. ("Peccary.")
 1869 A, pp. 385, 445, pl. xxviii, figs. 1, 2. (Dicotyles.)
 1871 C, p. 352. (Dicotyles.)
Reinhardt, J. 1880 A, p. 29. (Dicotyles.)
Roger, O. 1896 A, p. 208. (Dicotyles.)
Stehlin, H. G. 1899 A, pp. 115, 190, 273, 319. (Dicotyles.)
Trouessart, E. L. 1898 A, p. 817. (Dicotyles.)
 Pleistocene; Indiana, New Jersey.

Tayassu pennsylvanicus (Leidy.)

Leidy, J. 1889 H, p. 8, pl. ii, figs. 3–6. (Dicotyles.)
Cope, E. D. 1899 A, pp. 259, 262. (Mylohyus.)
Leidy, J. 1880 A, p. 347. (Dicotyles nasutus.)
Mercer, H. C. 1894 A, p. 98. (Dicotyles.)
 Pleistocene; Pennsylvania.

Tayassu serus (Cope.)

Cope, E. D. 1878 C, p. 224. (Dicotyles.)
 1889 G, p. 134. (Dicotyles.)
Cope and Wortman 1884 A, p. 19. (Dicotyles.)
Matthew, W. D. 1899 A, p. 72. (Dicotyles.)
Reinhardt, J. 1880 A, p. 28. (Dicotyles.)
Roger, O. 1896 A, p. 208. (Dicotyles.)
Stehlin, H. G. 1899 A, pp. 115, 189, 319. (Dicotyles.)
Trouessart, E. L. 1898 A, p. 817. (Dicotyles.)
 Miocene (Loup Fork); Kansas.

Tayassu tajacu (Linn.).

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 50. (Sus.)
Ameghino, F. 1889 A, p. 574. (Dicotyles.)
Baird, S. F. 1857 A, p. 627, pl. lxxxvii. (Dicotyles.)
Blainville, H. M. D. 1864 A, iv, AA, p. 138, pls. ii, iii, v–viii. (Sus torquatus.)
Cope, E. D. 1867 C, p. 151 (Cynorca proterva, in part); p. 155 (Dicotyles torquatus.)
 1868 I, p. 185. ("Dicotyles.")
 1889 G, p. 134. (Dicotyles tajassus.)
Cope and Wortman 1884 A, pp. 18, 19. (Dicotyles torquatus.)
Flower and Lydekker 1891 A, p. 290, fig. 109. (Dicotyles.)
Kindle, E. M. 1898 A, p. 485. (Dicotyles torquatus.)
Le Conte, J. L. 1848 A, p. 104. (Dicotyles torquatus.)
Leidy, J. 1860 B, p. 108, pl. xvii, figs. 13, 14. (Dicotyles fossilis.)
 1869 A, p. 384. (Dicotyles lenis.)
 1871 C, p. 352. (Dicotyles lenis.)
Lydekker, R. 1885 C, p. 252. (Dicotyles.)

Marsh, O. C. 1885 B, p. 293, fig. 112. (Dicotyles torquatus.)
Reinhardt, J. 1880 A. (Dicotyles torquatus, D. lenis.)
Roger, O. 1896 A, p. 208. (D. torquatus.)
Scott, W. B. 1890 B, p. 385. (Dicotyles torquatus.)
Stehlin, H. G. 1899 A, pp. 111, 187, 208, 318, 334. (Dicotyles torquatus.)
Trouessart, E. L. 1898 A, p. 817. (Dicotyles.)
Wyman, J. 1862 A, p. 422. (Dicotyles.)
Zittel, K. A. 1893 B, p. 342, fig. 280. (D. torquatus.)

Living: South America, Central America, North America to Arkansas: Pleistocene; South Carolina, Maryland, Virginia, Wisconsin, Illinois, Iowa, Kentucky.

Tayassu tetragonus (Cope).

Cope, E. D. 1899 A, pp. 259, 260, pl. xxi, figs. 3-3b. (Mylohyus.)

Pleistocene; Pennsylvania.

Tayassu sp. indet.

Leidy, J. 1869 A, p. 387. pl. xxviii, fig. tyles.)

Pliocene?; Niobrara River.

Tayassu sp. indet.

Scott, W. B. in Scott and Osborn 1890 B, p. 76, fig. 6. (Dicotyles.)
Stehlin, H. G. 1899 A, pp. 20, 115, 195. (Dicotyles.)
Williston, S. W. 1894 C, p. 24. (Platygonus.)

Miocene (Loup Fork); Nebraska?

PLATYGONUS Le Conte. Type *P. compressus* Le Conte.

Le Conte, J. L. 1848 A, p. 103. (Platigonus.[1])
Cope, E. D. 1887 B, p. 384.
  1889 G, p. 134.
Le Conte, J. L. 1848 A, p. 104 (Hyops, type *H. depressifrons*); p. 105 (Protochœrus, type *P. prismaticus*=Platygonus compressus).
  1848 B, p. 257.
Leidy, J. 1853 G. (Platygonus; Euchœrus, type *E. macrops*=P. compressus.)
  1869 A, p. 383.
  1871 C, p. 353.
  1889 G, p. 41.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1322.
Pictet, F. J. 1853 A, p. 303 (Platygonus); p. 326 (Hyops).
Reinhardt, J. 1880 A, p. 29.
Schlosser, M. 1886 B, p. 89.
Stehlin, H. G. 1899 A, pp. 116, 190, 210, 319.
Steinmann and Döderlein 1890 A, p. 796.
Wilckens, M. 1885 B, p. 270 (Hyops); p. 304 (Platygonus).
Williston, S. W. 1894 C.
Zittel, K. A. 1893 B, p. 342.

Platygonus bicalcaratus Cope.

Cope, E. D. 1893 A, p. 68, fig. 5.
Matthew, W. D. 1899 A, p. 75.
Stehlin, H. G. 1899 A, p. 117.
Trouessart, E. L. 1898 A, p. 816.
Williston, S. W. 1894 C, p. 24.

Pliocene (Blanco); Texas.

Platygonus compressus Le Conte.

Le Conte, J. L. 1848 A, p. 103, figs. 1, 2.
Cope, E. D. 1869 E, p. 176. (Dicotyles.)
  1884 G, p. 15.
  1888 X, p. 1092, fig. 6.
  1889 F.
Cope and Wortman, 1884 A, p. 20.
Harlan, R. 1825 A, p. 222. ("Extinct pecari.")
Kindle, E. M. 1898 A, p. 485.
Klippart, J. H. 1875 A. (Dicotyles.)
L. P. B. 1885 A, p. 193, fig. 28.
Le Conte, J. L. 1848 A, p. 104 (Hyops depressifrons); p. 105 (Protochœrus prismaticus).
  1848 B, pls. i-iv.
Le Conte, J. L. 1852 A, p. 3 (Dicotyles depressifrons); p. 5 (Protochœrus prismaticus).
  1852 B. (Dicotyles costatus.)
  1852 D. (Hyops depressifrons, P. compressus.)
Leidy, J. 1853 G, p. 323, pl. xxxvii, figs. 12-16; pl. xxviii, figs. 2, 3 (P. compressus); p. 342, pl. xxxviii, fig. 1 (Dicotyles depressifrons); p. 342, pl. xxxvii, fig. 18 (Protochœrus prismaticus); p. 342. (Dicotyles costatus); p. 340, pl. xxxvi, figs. 1, 2; pl. xxxvii, figs. 5-8 (Euchœrus macrops).
  1856 R. (Dicotyles.)
  1857 J, pl. vi, figs. 2-7. (Dicotyles.)
  1862 A. (Dicotyles.)
  1868 I, p. 231. (Dicotyles.)
  1869 A, pp. 200, 383.
  1870 H, p. 13.
  1871 C, p. 353.
  1889 G, p. 41, pl. viii, fig. 1.
  1889 H, p. 12.
Marsh, O. C. 1884 F, fig. 761
  1885 B, fig. 109.
Miller, G. S. 1899 B, p. 372.
Newberry, J. S. 1874 F, p. 77. (Dicotyles.)
  1875 A, p. vi. (Dicotyles.)
Pictet, F. J. 1853 A, p. 303 (P. compressus); p. 325 (Protochœrus prismaticus).
Reinhardt, J. 1880 A, p. 29. (Dicotyles.)
Roger, O. 1896 A, p. 208.
Stehlin, H. G. 1899 A, pp. 117, 190, 273.
Trouessart, E. L. 1898 A, p. 817.
Williston, S. W. 1894 C, p. 24.
  1897 I, p. 303.
  1898 I, p. 92.
Wyman, J. 1862 A, p. 422. ("Dicotyles.")

Pleistocene; Illinois, Indiana, Kentucky, Ohio, New York, Missouri, Iowa, Kansas.

Platygonus condoni Marsh.

Marsh, O. C. 1871 D, p. 41.
Cope, E. D. 1886 B, p. 359.
  1886 H.
Cope and Wortman 1884 A, pp. 18, 19. (Dicotyles.)
King, C. 1878 A, p. 443.
Reinhardt, J. 1880 A, p. 30.
Roger, O. 1896 A, p. 208.
Stehlin, H. G. 1899 A, p. 118.

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[1] This, the original spelling of this generic name, was probably due to a printer's error.

Trouessart, E. L. 1898 A, p. 816.
Wilckens, M. 1885 B, p. 306.
Williston, S. W. 1894 C, p. 24.
Pliocene; Oregon.

Platygonus leptorhinus Willist.

Williston, S. W. 1894 F.
Stehlin, H. G. 1899 A, pp. 117, 191, 273, 333.
Trouessart, E. L. 1898 A, p. 816.
Williston, S. W. 1894 C, p. 27, pls. vii, viii; text figs. 1-6.
Pliocene; Kansas.

Platygonus rex Marsh.

Marsh, O. C. 1894 L, p. 273, figs. 31, 32.
Roger, O. 1896 A, p. 208.
Stehlin, H. G. 1899 A, pp. 21, 115. (Dicotyles.)
Trouessart, E. L. 1898 A, p. 816.
Pliocene; Oregon.

Platygonus striatus Marsh.

Marsh, O. C. 1871 D, p. 41.
King, C. 1878 A, p. 430.
Matthew, W. D. 1899 A, p. 72.
Roger, O. 1896 A, p. 208.
Stehlin, H. G. 1899 A, p. 118.
Trouessart, E. L. 1898 A, p. 816.
Williston, S. W. 1894 C, p. 24.
Miocene (Loup Fork); Nebraska.

Platygonus vetus Leidy.

Leidy, J. 1882 A, p. 301.
Cope, E. D. 1888 X, p. 1089.
Cope and Wortman 1884 A.
Dugès, A. 1891 A, p. 16, pls. i, ii. (P. alemanii.)
Leidy, J. 1889 G, p. 49.
1889 H, p. 12, pl. ii, figs. 1, 2.
Lesley, J. P. 1889 A, p. 690, figure.
Mercer, H. C. 1894 A, p. 98. (Dycotyles pennsylvanicus.)
Roger, O. 1896 A, p. 208.
Stehlin, H. G. 1899 A, p. 117.
Trouessart, E. L. 1898 A, p. 816.
Williston, S. W. 1894 C.
Pleistocene; Pennsylvania.

Platygonus ziegleri Marsh.

Marsh, O. C. 1871 D, p. 40.
Cope and Wortman 1884 A, p. 21.
Leidy, J. 1872 B, p. 365.
Matthew, W. D. 1899 A, p. 48.
Roger, O. 1896 A, p. 207.
Stehlin, H. G. 1899 A, pp. 20, 118, 191.
Trouessart, E. L. 1898 A, p. 816.
Williston, S. W. 1894 C, p. 24.
Eocene (Bridger); Wyoming.
The generic position of this species is doubtful.

THINOTHERIUM Cope. Type *T. annulatum* Cope. Not *Thinotherium* Marsh, 1872.

Cope, E. D. 1870 F, p. 292.
A genus of which little is known. Regarded at the time of description as belonging to the Hippopotamidæ.

Thinotherium annulatum Cope.

Cope, E. D. 1870 F, p. 292.
Roger, O. 1896 A, p. 207.
Miocene?; Virginia.

SUINÆ.

Roger, O. 1896 A, p. 209.
Zittel, K. A. 1893 B, p. 343.

SUS Linn. Type *S. scrofa* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 49.
Blainville, H. M. D. 1864 A, iv, AA, pls. i-ix.
Flower and Lydekker 1891 A, p. 281.
Hensel, R. 1875 A.
Huxley, T. H. 1872 A, p. 313.
Owen, R. 1845 B, p. 544.
1866 B, p. 458.
1868 A, p. 344, fig. 273.
Parker, W. K. 1874 B, pls. xxviii-xxxvii.
Paulli, S. 1900 A, p. 193.
Pomel, A. 1848 A.
Roger, O. 1896 A, p. 209.
Rütimeyer, L. 1862 B.
1867, Verh. naturf. Gesellsch. Basel, iv, pp. 139-176.
Stehlin, H. G. 1899 A.
Trouessart, E. L. 1898 A, p. 820.
Woodward, A. S. 1898 B, 345.
Zittel, K. A. 1893 B, p. 344.

Sus scrofa Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 49.
Agassiz, L. in Holmes F. S. 1858 A ("Hog.")
Blainville, H. M. D. 1864 A, iv, AA, p. 113, pls. ii, iii, vi-viii.
Cope, E. D. 1870 E, p. 284. (Sus vagrans.)
1873 E (S. vagrans.)
1873 F, p. 291. (Sus vagrans.)
1873 L, p. 207. (S. scrofa.)
Emmons, E. 1858 B, p. 198, fig. 22.
Holmes, F. S. 1850 B, p. 203. ("Hog.")
1858 A ("Hog.")
Leidy, J. 1860 B, p. 109, pl. xix, figs. 4, 5.
1869 A, p. 443.
1873 E.
Owen, R. 1866 B, pp. 458, 467, figs. 313-315.
Paulli, S. 1900 A, p. 193, figs. 7, 8.
Rafinesque, C. S., 1831, Enum. some remark, nat. objects. (Aper pecari.)
Roger, O. 1896 A, p. 210.
Rütimeyer, L. 1862 B, p. 26.
Stehlin, H. G. 1899 A.
Trouessart, E. L. 1898 A, p. 821.
This species has been reported from various parts of the United States, North Carolina, South Carolina, New Jersey, Nebraska, and from deposits ranging from the Miocene to the present; but it is most probable that all the remains have been derived from the introduced race.

Superfamily CAMELOIDEA Gill.

Gill, T. 1872 B, p. 76.

Following the suggestions of Dr. W. B. Scott, this group is made to include the Agriochœridæ and their allies. Unless otherwise indicated, the following authorities use for this group, in the restricted sense, the name Tylopoda.

Burmeister, H. 1867 A, p. 233.
Cope, E. D. 1898 B, p. 132.
Flower, W. H. 1874 A.
    1885 A.
Flower and Lydekker 1891 A, p. 295.
Rütimeyer, L. 1867 B. (Camelina.)
Schlosser, M. 1886 A, p. 255.
Scott, W. B. 1890 B, p. 387.
    1891 A.
    1891 C, p. 63.
    1892 C, p. 15.
    1898 C, p. 75.
    1899 A, p. 111.
Slade, D. D. 1893 A.
Woodward, A. S. 1898 B, p. 358.
Wortman, J. L. 1898 A, p. 94.

AGRIOCHŒRIDÆ.

Unless otherwise indicated, the following authors use the family name Oreodontidæ.

Ameghino, F. 1889 A, p. 576.
Bettany, G. T. 1873 A.
    1876 A.
Cope, E. D. 1874 B, p. 463.
    1884 H, p. 26.
    1884 M.
    1884 T.
    1884 DD.
    1885 B, p. 487.
    1887 B, pp. 379, 386.
    1887 N.
    1888 X, pp. 1080, 1092.
    1889 C, p. 171, *et seq.*
Flower and Lydekker 1891 A, p. 293. (Cotylopidæ.)
Gill, T. 1872 B, pp. 10, 81.
Leidy, J. 1869 A, pp. 71, 379 (Oreodontidæ); p. 131 (Agriochœridæ).
    1871 C, p. 345 (Oreodontidæ); p. 348 (Agriochœridæ).
    1873 B, p. 318.
Major, Fors. 1873 A, p. 104.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1326. (Cotylopidæ.)
Osborn and Wortman 1894 A, p. 215.
Roger, O. 1896 A, p. 212.
Schlosser, M. 1886 A, p. 255.
    1886 B, p. 46.
    1888 A.
    1890 C.
Scott, W. B. 1885 B.
    1889 C.
    1890 A, p. 490.
    1890 B.
    1891 A, p. 71.
    1892 A, p. 433.
    1895 C, p. 164.
    1898 C, p. 74.
    1899 A, p. 85.
Steinmann and Döderlein 1890 A, p. 799.
Trouessart, E. L. 1898 A, p. 835.
Woodward, A. S. 1898 B, p. 354.
Zittel, K. A. 1893 B, pp. 348, 356.

AGRIOCHŒRINÆ.

Cope, E. D. 1884 M, p. 571.
Flower and Lydekker 1891 A, p. 293.
Leidy, J. 1869 A, p. 131. (Agriochœridæ.)
    1871 C, p. 348. (Agriochœridæ.)
Lydekker, R. 1896 B, p. 375. (Agriochœridæ.)
Major, Fors. 1873 A, p. 104. (Agriochœridæ.)
Osborn, H. F. 1893 F, p. 132. (Artionychia.)
    1893 J, p. 611. (Artionychia.)
Osborn and Wortman 1893 A, p. 4. (Artionychia.)
Roger, O. 1896 A, p. 212.
Scott, W. B. 1889 C, p. 75.
    1890 B, pp. 320, 358.
    1892 A, p. 434.
    1899 A, p. 101. (Agriochœridæ.)
Trouessart, E. L. 1898 A, p. 833.
Zittel, K. A. 1893 B, p. 351.

PROTAGRIOCHŒRUS Scott. Type *P. annectens* Scott.

Scott, W. B. 1899 A, p. 100.

Protagriochœrus annectens Scott.

Scott, W. B. 1899 A, p. 100, pl. iv, figs. 26–28.
    Eocene (Uinta): Utah.

AGRIOCHŒRUS Leidy. Type *A. antiquus* Leidy.

Leidy, J. 1850 C, p. 121.
Cope, E. D. 1879 E, p. 375. (Coloreodon, type *C. ferox*.)
    1879 K, p. 197. (Merycopater, type *Hyopotamus guyotianus*.)
    1884 M, pp. 504, 559 (Agriochœrus); pp. 504, 570 (Coloreodon).
    1887 B, p. 388 (Coloreodon); p. 398 (Agriochœrus).
Cope, E. D. 1888 X, p. 1094.
    1889 C, p. 48.
    1889 G, p. 119.
    1894 E, p. 869. (Coloreodon.)
Leidy, J. 1852 L, p. 64.
    1854 A, pp. 24, 113.
    1869 A, p. 132.
    1871 C, p. 349.
    1873 B, p. 216,

Marsh, O. C. 1894 L, p. 270. (Agriomeryx, type *A. migrans.*)
Nicholson and Lydekker 1889 A, p. 1327. (Agriochœrus, Coloreodon.)
Osborn, H. F. 1893 D, p. 44. (Agriochœrus, Artionyx.)
1893 E. (Artionyx.)
1893 F. (Artionyx.)
1893 J, p. 611. (Artionyx.)
1893 K. (Artionyx.)
1898 A, p. 146.
Osborn and Wortman 1893 A, p. 5. (Artionyx, type *A. gaudryi.*)
Schlosser, M. 1885 A, p. 685.
1886 B, p. 47.
Scott, W. B. 1889 C, p. 75.
1890 A.
1890 B, p. 358 (Agriochœrus): p. 361 (Coloreodon).
1891 A, p. 48.
1891 D, p. 90.
1892 A, p. 434.
1894 B.
1894 D.
1894 E.
1899 A, p. 88, 108.
Steinmann and Döderlein 1890 A, p. 799.
Trouessart, E. L. 1898 A, p. 834.
Woodward, A. S. 1898 B, p. 356.
Wortman, J. L. 1893 A. (Artionyx.)
1895 A, p. 145.
Zittel, K. A. 1893 B, p. 352. (Agriochœrus, Coloreodon.)

Agriochœrus antiquus Leidy.

Leidy, J. 1850 C, p. 122.
Cope, E. D. 1879 E, p. 375. (Merycopater.)
1884 M, p. 560.
Hayden, F. V. 1858 B, p. 157.
King, C. 1878 A, p. 411.
Leidy, J. 1852 J, p. 571.
1852 L, p. 65.
1853 D, p. 392.
1854 A, p. 24, pl. i, figs. 5–10.
1854 E, p. 157.
1869 A, pp. 132, 381, pl. xiii, fig. 4.
1870 P, p. 112.
1871 C, p. 349.
1873 B, pp. 216, 319.
Matthew, W. D. 1899 A, p. 60.
Roger, O. 1896 A, p. 212.
Trouessart, E. L. 1898 A, p. 833.
Wortman, J. L. 1895 A, p. 145, pl. i; text figs. 8–15, 17 (A. latifrons, not of Leidy); p. 177 (A. antiquus).
Oligocene (White River); South Dakota.

Agriochœrus auritus Leidy.

Leidy, J. 1852 J, p. 563, pl. xv, figs. 1, 2. (Eucrotaphus.)
Cope, E. D. 1884 M, p. 560. (Eucrotaphus.)
Leidy, J. 1854 A, pp. 56, 113, pl. vii, figs. 1–3. (Eucrotaphus.)
1869 A, p. 381. (Syn?. of A. major.)
Trouessart, E. L. 1898 A, p. 834. (Syn?. of A. major.)
Oligocene (White River); South Dakota.

If this species and *A. major* are identical, *A. auritus* will stand as the correct name.

Agriochœrus ferox (Cope.)

Cope, E. D. 1879 E, p. 375. (Coloreodon.)
1884 M, pp. 505, 570, figure. (Coloreodon.)
1884 T, p. 282. (Coloreodon.)
Matthew, W. D. 1899 A, p. 64. (Agriochœrus.)
Roger, O. 1896 A, p. 213. (Coloreodon.)
Scott, W. B. 1890 B, pl. xiv, fig. 13; pl. xv, fig. 22. (Coloreodon.)
Trouessart, E. L. 1898 A, p. 834. [Agriochœrus (Coloreodon).]
Wortman, J. L. 1895 A, p. 178. (Agriochœrus.)
Miocene (John Day); Oregon.

Agriochœrus gaudryi (Osb. and Wort.).

Osborn and Wortman 1893 A, p. 5, figs. 1, 3, 4, 5 B. (Artionyx.)
Ameghino, F. 1894 A, p. 319. (Artionyx.)
Osborn, H. F. 1893 F, p. 131, fig. 4. (Artionyx.)
Roger, O. 1896 A, p. 212.
Scott, W. B. 1894 B.
Trouessart, E. L. 1898 A, p. 834. [Agriochœrus (Coloreodon).]
Wortman, J. L. 1895 A, p. 170, figs. 1, 19, 20 (Agrochœrus major); p. 178 (Agriochœrus gaudryi?).
Oligocene (White River); South Dakota.

Agriochœrus guyotianus Cope.

Cope, E. D. 1879 D, p. 77. (Hyopotamus.)
1879 B, p. 58. (Merycopater.)
1879 E, p. 375. (Merycopater guiotianus.)
1879 K, p. 197. (Merycopater.)
1884 M, pp. 560, 563.
1884 T, p. 281.
1889 G, pl. iii.
Lydekker, R. 1883 A, p. 157. (Merycopater.)
Roger, O. 1896 A, p. 212.
Scott, W. B. 1890 B, pl. xiv, figs. 11, 12.
Trouessart, E. L. 1898 A, p. 834.
Wortman, J. L. 1895 A, figs. 2–7, 16–18.
Miocene (John Day); Oregon.

Agriochœrus latifrons Leidy.

Leidy, J. 1869 A, pp. 135, 381, pl. xiii, figs. 1–3.
Cope, E. D. 1884 M, p. 560.
1884 T, p. 281.
Leidy, J. 1867 D, p. 32.
1871 C, p. 349.
1873 B, pp. 216, 319.
Lydekker, R. 1896 B, p. 374, fig. 78.
Marsh, O. C. 1875 B, p. 250.
Matthew, W. D. 1899 A, p. 60.
Roger, O. 1896 A, p. 212.
Scott, W. B. 1890 B, text figs. vii, x^{3}.
1891 A, p. 49.
Trouessart, E. L. 1898 A, p. 834.
Woodward, A. S. 1898 B, p. 357, fig. 204.
Wortman, J. L. 1895 A, p. 177 (in part, not figs. 8–15, 17).
Zittel, K. A. 1893 B, p. 352, fig. 287.
Oligocene (White River); South Dakota.

Agriochœrus macrocephalus (Cope.)

Cope, E. D. 1879 E, p. 376. (Coloreodon.)
1884 M, p. 570. (Coloreodon.)
1884 T, p. 281. (Coloreodon.)
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 213. (Coloreodon.)

Trouessart, E. L. 1898 A, p. 835. [Agriochœrus (Coloreodon).]
Wortman, J. L. 1895 A, p. 178.
Miocene (John Day); Oregon.

Agriochœrus major Leidy.

Leidy, J. 1856 J, p. 164.
Cope, E. D. 1884 M. p. 560.
1884 T, p. 281.
Hayden, F.V . 1858 B, p. 157.
Leidy, J. 1869 A, pp. 134, 381.
1871 C, p. 349.
Matthew, W. D. 1899 A, p. 60.
Roger, O. 1896 A, p. 212.
Trouessart, E. L. 1898 A, p. 834.
Wortman, J. L. 1895 A, p. 178.
Oligocene (White River); South Dakota.

It is not unlikely that this species is identical with *A. auritus* Leidy. If this view is accepted, the name *auritus* will supersede *major*.

Agriochœrus migrans (Marsh).

Marsh, O. C. 1894 L, p. 270, fig. 24. (Agriomeryx.)
Matthew, W. D. 1899 A, p. 60. (Agriochœrus.)
Trouessart, E. L. 1898, A, p. 834. [Agriochœrus (Coloreodon).]
Oligocene (White River); South Dakota.

Agriochœrus ryderanus Cope.

Cope, E. D. 1881 C, p. 173. (Coloreodon.)
1884 M, pp. 560, 566.
1884 T, p. 281.
Roger, O. 1896 A, p. 212.
Trouessart, E. L. 1898 A, p. 834.
Wortman, J. L. 1895 A, p. 178.
Miocene (John Day); Oregon.

Agriochœrus trifrons Cope.

Cope, E. D. 1884 M, pp. 560, 561.
1884 T, p. 281.
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 212.
Trouessart, E. L. 1898 A, p. 834.
Wortman, J. L. 1895 A, p. 177.
Miocene (John Day); Oregon.

PROTOREODONTINÆ.

Scott, W. B. 1890 A, p. 503.
Flower and Lydekker 1891 A, p. 293.
Marsh, O. C. 1894 L, p. 267. (Eomericidæ.)
Roger, O. 1896 A, p. 212.
Scott, W. B. 1890 B, pp. 320, 361.
1899 A, p. 85. (Oreodontidae, in part.)
Zittel, K. A. 1893 B, p. 351.

PROTOREODON Scott and Osb. Type *P. parvus* Scott and Osb.

Scott and Osborn 1887 A, p. 257.
Berg, C., 1899, Commun. Mus. Nac. Buenos Aires, i, p. 79. (Chorotherium, to replace Agriotherium, preoccupied.)
Cope, E. D. 1888 X, p. 1082.
1890 C, p. 471.
Flower and Lydekker 1891 A, p. 293.
Marsh, O. C. 1894 L, p. 268. (Syn. of Eomeryx.)
Nicholson and Lydekker 1889 A, p. 1328.
Pavlow, M. 1900 A, pp. 34, 44.
Scott, W. B. 1889 C, p. 75.
1890 A, p. 487, pl. vii, figs. 1-8.
1890 B, p. 361, pl. xiii, figs. 1-3; pl. xvi, figs. 23-26.
1892 A, p. 433.
1894 E.
1898 C, p. 79. (Agriotherium, type *A. paradoxicum.*)
1899 A, p. 85.
Wortman, J. L. 1898 A, p. 96.
Zittel, K. A. 1893 B, p. 351.

Protoreodon minor Scott.

Scott, W. B. 1899 A, p. 95, pl. iii, fig. 23.
Eocene (Uinta); Utah.

Protoreodon paradoxicus Scott.

Scott, W. B. 1898 C, p. 79. (Agriotherium.)
Matthew, W. D. 1899 A, p. 50. (Agriotherium.)
Scott, W. B. 1899 A, pp. 86, 95, pl. iv, figs. 24, 25. (Protoreodon.)
Eocene (Uinta); Utah.

Protoreodon parvus Scott and Osb.

Scott and Osborn 1887 A, p. 257, figure.
Cope, E. D 1890 C, p. 470.
Marsh, O. C. 1894 L, p. 268. (Syn. of Eomeryx pumilis.)
Matthew, W. D. 1899 A, p. 50. (Eomeryx.)
Pavlow, M. 1900 A, p. 34.
Roger, O. 1896 A, p. 212.
Scott, W. B. 1890 A, p. 487, pl. vii, figs. 1-8.
1890 B, pl. xiii, figs. 1-3; pl. xvi, figs. 23-26.
1899 A, pp. 89, 95, pl. iii, figs. 19-21.
Trouessart, E. L. 1898 A, p. 833.
Wortman. J. L. 1898 A, p. 96.
Zittel, K. A. 1893 B, p. 351, fig. 286.
Eocene (Uinta); Utah.

Protoreodon sp. indet.

Scott, W. B. 1899 A, p. 96, pl. iii, fig. 22.
Eocene (Uinta); Utah.

EOMERYX Marsh. Type *E. pumilis* Marsh.

Marsh, O. C. 1894 L, p. 266.
Cope, E. D. 1894 E, p. 869. (Syn. of Protoreodon.)
Marsh, O. C. 1877 E. (Inadequate description; no species.)
Pavlow, M. 1900 A, p. 34.
Scott, W. B. 1890 A, p. 488.
1899 A, pp. 85, 86. (Syn.? of Protoreodon.)
Scott and Osborn 1887 A, p. 259.

Wortman, J. L. 1898 A, p. 96.
Zittel, K. A. 1893 B, p. 351. (Syn.? of Protoreodon.)

Eomeryx pumilis Marsh.

Marsh, O. C. 1875 B, p. 250. (Agriochœrus.)
Cope, E. D. 1884 M, p. 560. (Agriochœrus.)
King, C. 1878 A, p. 407. (Agriochœrus.)
Marsh, O. C. 1894 L, p. 266, figs. 18-22.
Matthew, W. D. 1899 A, p. 50.
Pavlow, M. 1900 A, p. 34.
Scott, W. B. 1890 A, p. 487. (Agriochœrus.)
1899 A, pp. 86, 95. (Protoreodon.)
Scott and Osborn 1887 A, p. 258. (Protoreodon?.)
Trouessart, E. L. 1898 A, p. 833. (Syn. of Protoreodon parvus.)
Wortman, J. L. 1898 A, p. 96.
Eocene (Uinta); Utah.

HYOMERYX Marsh. Type *H. breviceps* Marsh.

Marsh, O. C. 1894 L, p. 145.
Scott, W. B. 1898 C, p. 81.
1899 A, pp. 95, 99.
Wortman, J. L. 1895 A, p. 97.

Hyomeryx breviceps Marsh.

Marsh, O. C. 1894 L, p. 268, fig. 19.
Matthew, W. D. 1899 A, p. 50.
Roger, O. 1896 A, p. 212.
Trouessart, E. L. 1898 A, p. 833.
Wortman, J. L. 1895 A, p. 145.
Eocene (Uinta); Utah.

MERYCOIDODONTINÆ.

Branco, W. 1897 A, p. 24. (Oreodontinæ.)
Cope, E. D. 1884 M, p. 571. (Oreodontinæ.)
Flower and Lydekker 1891 A, p. 293. (Cotylopinæ.)
Gill, T. 1872 B, p. 81. (Oreodontinæ.)
Lydekker, R. 1896 B, p. 373. (Cotylopidæ.)
Schlosser, M. 1890 D, p. 722. ("Oreodonten.")
Scott, W. B. 1889 C, p. 75. (Oreodontinæ.)
1892 A, p. 434. (Oreodontinæ.)
Zittel, K. A. 1893 B, p. 352. (Oreodontidæ.)

MERYCOIDODON Leidy. Type *M. culbertsonii* Leidy.

Leidy, J. 1848 B, p. 47.

The generic name *Merycoidodon* clearly has priority over both *Oreodon* and *Cotylops*, notwithstanding the fact that it has been discarded by Leidy himself and succeeding writers. Unless otherwise indicated, the following authors employ the name *Oreodon*.

Bettany, G. T. 1873 A.
1876 A.
Bruce, A. T. 1883 A, p. 36, figs. 1-4. (Oreodon.)
Cope, E. D. 1884 H, p. 22.
1884 M, p. 505.
1885 B, p. 483.
1887 B, p. 386.
1887 S, P. 85.
1888 X, p. 1093.
Dawkins, W. B. 1870 A.
Flower, W. H. 1873 A.
Flower and Lydekker 1891 A, p. 293. (Cotylops.)
Gaudry, A. 1878 B, p. 82.
Grinnell and Dana 1876 A.
Hay, O. P. 1899 A, p. 594. (Merycoidodon.)
Leidy, J. 1851 D, p. 238 (Oreodon); p. 239 (Cotylops, type C. *speciosa*).
1852 J, pp. 540, 548.
1852 L, p. 64. (Oreodon, Merycoidodon.)
1854 A, pp. 29, 47, 113.
1869 A, pp. 72, 379.
1870 P, p. 111.
1871 C, p. 345.
1873 B, p. 201.
Marsh, O. C. 1873 H, p. 409.
1875 B, p. 250.
1877 E.
1884 F, p. 172.
Nicholson and Lydekker 1889 A, p. 1326. (Cotylops.)
Schlosser, M. 1886 B, p. 47.
Scott, W. B. 1884 C.
1885 B.
1889 C, p. 75.
1890 A.
1890 B, p. 320.
1891 A, p. 53.
1894 D.
1894 H.
1895 C, p. 125, *et seq.*
1899 A, p. 87.
Steinmann and Döderlein 1890 A, p. 799.
Trouessart, E. L. 1898 A, p. 835.
Woodward, A. S. 1898 B, p. 354.
Wortman, J. L. 1895 A, p. 173.
Zittel, K. A. 1893 B, p. 352.

Merycoidodon affinis (Leidy).

Leidy, J. 1869 A, pp. 105, 380, pl. ix, fig. 3. (Oreodon.)
Cope, E. D. 1884 M, p. 512. (Oreodon.)
1884 T, p. 281. (Oreodon.)
Leidy, J. 1869 A, p. 96, No. 10. (Oreodon.)
1871 C, p. 346. (Oreodon.)
1873 B, p. 212. (Oreodon.)
Roger, O. 1896 A, p. 213. (Oreodon.)
Trouessart, E. L. 1898 A, p. 835. (Oreodon.)
Oligocene (White River); South Dakota.

Merycoidodon bullatus (Leidy).

Leidy, J. 1869 A, pp. 106, 380. (Oreodon.)
Cope, E. D. 1884 M, p. 517. (Syn. of Eucrotaphus jacksoni.)
King, C. 1878 A, p. 411. (Eporeodon.)
Leidy, J. 1871 C, p. 346. (Oreodon.)
1873 B, p, 212 (Oreodon bullatus); p. 318 (Oreodon culbertsonii).

Marsh, O. C. 1875 B, p. 250. (Eporeodon.)
Matthew, W. D. 1899 A, p. 60. (Oreodon.)
Osborn and Wortman 1894 A, p. 218, fig. 5c. (Oreodon.)
Roger, O. 1896 A, p. 213. (O. jacksoni.)
Scott, W. B. 1890 B, pl. xiii, fig. 6. (Oreodon.)
Trouessart, E. L. 1898 A, p. 836. (Eucrotaphus.)
Oligocene (White River); South Dakota.

Merycoidodon culbertsonii Leidy.

Leidy, J. 1848 B, p. 47, plate.

Unless otherwise indicated, the following authors refer to this species under the generic name *Oreodon*.

Bettany, G. T. 1873 A.
Cope, E. D. 1884 M, pp. 511, 512, 513. (O. culbertsonii and O. culbertsonii periculorum.)
1888 X, p. 1094.
Farr, M. S. 1896 A, p. 157.
Gaudry, A. 1878 B, p. 81, fig. 90.
Hayden, F. V. 1858 B, p. 157.
King, C. 1878 A, p. 411.
Leidy, J. 1851 D, p. 239 (Cotylops speciosa); p. 238 (O. priscum).
1851 E, p. 276. (Oreodon robustum.)
1852 J, p. 548, pl. x, figs. 4-6; pl. xiii, figs. 3, 4.
1852 L, p. 64. (Oreodon priscum, M. culbertsonii.)
1853 D, p. 392.
1854 A, pp. 45, 113, pls. ii, iii; pl. iv, figs. 1-5; pl. v, figs. 1, 2; pl. vi, figs. 8-11.
1854 E.
1869 A, pp. 86, 379, pl. vi, fig. 1; pl. vii, fig. 2; pl. ix, fig. 1.
1870 J, p. 67.
1870 P, p. 112.
1871 C, p. 345.
1873 B, pp. 211, 318.
Lydekker, R. 1885 C, p. 207.
Marsh, O. C. 1870 D.
Matthew, W. D. 1899 A, p. 60.
Osborn and Wortman 1894 A, p. 215, fig. 5 A.
Roger, O. 1896 A, p. 213.
Scott, W. B. 1890 B, pl. xii; pl. xiii, fig. 4; pl. xvi, figs. 27-29; text figs. ii, iii, iv, x.
Stewart, A. 1897 A, pl. i.
Trouessart, E. L. 1898 A, p. 835.
Zittel, K. A. 1893 B, p. 353, fig. 288.
Oligocene (White River); South Dakota.

Merycoidodon gracilis Leidy.

Leidy, J. 1851 D, p. 239. (Oreodon.)
Cope, E. D. 1874 B, p. 498. (Oreodon.)
1884 M, pp. 511, 512. (Oreodon, with varieties gracilis and coloradoensis.)
1884 T, p. 281. (Oreodon.)
Hayden, F. V. 1858 B, p. 157. (Oreodon.)
King, C. 1878 A, p. 411. (Oreodon.)
Leidy, J. 1852 J, p. 550, pl. xi, figs. 2, 3; pl. xiii, figs. 5, 6. (Oreodon.)
1852 L, p. 64. (Oreodon.)
1853 D, p. 392. (Oreodon.)
1854 A, p. 53, pl. v, figs. 3, 4; pl. vi, figs. 1-7. (Oreodon, Merycoidodon.)
1854 E, p. 157. (Oreodon.)
1869 A, pp. 94, 379, pl. vi, figs. 2, 3. (Oreodon.)
1871 C, p. 346. (Oreodon.)
1873 B, p. 211. (Oreodon.)
Osborn and Wortman 1894 A, p. 216, fig. 5, B. (Oreodon.)
Roger, O. 1896 A, p. 213. (Oreodon.)
Scott, W. B. 1890 B, pl. xiii, fig. 5; text figs. i, ix, x, 5. (Oreodon.)
Scott and Osborn 1887 B, p. 154. (Oreodon.)
Trouessart, E. L. 1898 A, p. 835. (Oreodon.)
Zittel, K. A. 1893 B, p. 353. (Oreodon.)
Oligocene (White River): South Dakota, Nebraska, Colorado.

Merycoidodon hybridus (Leidy).

Leidy, J. 1869 A, pp. 105, 380, pl. ix, fig. 4. (Oreodon.)
1871 C, p. 346. (Oreodon.)
1873 B, p. 212. (Oreodon.)
Roger, O. 1896 A, p. 213.
Trouessart, E. L. 1898 A, p. 835.
Oligocene (White River): South Dakota.

Merycoidodon minor Cope.

Cope, E. D. 1888 X, p. 1094. (Name only.)

EUCROTAPHUS Leidy. Type *E. jacksoni* Leidy.

Leidy, J. 1850 A, p. 90.
Cope, E. D. 1884 H, p. 23.
1884 M, pp. 504, 513.
1884 T.
1885 B, p. 484.
1887 B, p. 386.
1888 X, p. 1093.
Leidy, J. 1851 D, p. 239.
1852 J, p. 562.
1852 L, p. 64.
1854 A, pp. 56, 113.
1854 C, p. 157.
1873 B, p. 212.
Nicholson and Lydekker 1889 A, p. 1327.
Scott, W. B. 1890 B, p. 320. (Syn. of Oreodon.)
Wortman, J. L. 1893 A.
Zittel, K. A. 1893 B, pp. 352, 355.

Eucrotaphus jacksoni Leidy.

Leidy, J. 1850 A, p. 90.
Cope, E. D. 1884 M, pp. 514, 517 (E. jacksoni); p. 519 (subsp. leptacanthus).
Leidy, J. 1852 L, p. 65.
1854 A, pp. 56, 113, pl. vii, figs. 4-6.
1869 A, pp. 134, 381.
Lydekker, R. 1877 A, p. 334. (Eporeodon.)
Roger, O. 1896 A, p. 213. (Oreodon.)
Scott, W. B. 1890 B, p. 372, fig. x, 2. (Oreodon.)
Trouessart, E. L. 1898 A, p. 836.
Oligocene (White River); South Dakota.

EPOREODON Marsh. Type *Oreodon occidentalis* Marsh.

Marsh, O. C. 1875 B, p. 249.
Lydekker, R. 1885 C, p. 208.
Marsh, O. C. 1877 E, p. 365.
Nicholson and Lydekker 1889 A, p. 1327.
Osborn and Wortman 1894 A, p. 218.
Schlosser, M, 1886 B, p. 47.
Scott, W. B. 1890 B, p. 339.
1895 C, p. 125.
Trouessart, E. L. 1898 A, p. 836. (Syn. of Eucrotaphus.)
Zittel, K. A. 1893 B, p. 355.

Eporeodon longifrons (Cope).

Cope, E. D. 1884 M, pp. 519, 520. (Eucrotaphus major longifrons.)
Matthew, W. D. 1899 A, p. 64. (Eporeodon major, var. longifrons.)
Miocene (John Day); Oregon.

Eporeodon? major (Leidy).

Leidy, J. 1854 A, p. 55, pl. iv, fig. 6. (Oreodon, Merycoidodon.)
Cope, E. D. 1884 M, pp. 519, 520. (Eucrotaphus.)
1884 T, p. 281. (Eucrotaphus.)
Hayden, F. V. 1858 B, p. 157. (Oreodon.)
King, C. 1878 A, p. 411.
Leidy, J. 1853 D. (Oreodon, no description.)
1854 E. (Syn. of Oreodon culbertsoni.)
1856 J, p. 164. (Oreodon.)
1869 A, pp. 99, 380, pl. vii, fig. 1; pl. viii. (Oreodon.)
1871 C, p. 346. (Oreodon.)
Marsh, O. C. 1875 B, p. 250.
1897 C, p. 524, fig. 98.
Matthew, W. D. 1899 A, pp. 60, 64.
Osborn and Wortman 1894 A, p. 218, fig. 5, D.
Roger, O. 1896 A, p. 213.
Scott, W. B. 1890 B, p. 339.
Scott and Osborn 1887 B, p. 155. (Eucrotaphus.)
Trouessart, E. L. 1898 A, p. 836. (Eucrotaphus.)
Oligocene (White River); South Dakota, North Dakota, Colorado, Nebraska.

Eporeodon occidentalis Marsh.

Marsh, O. C. 1873 H, p. 409. (Oreodon.)
Cope, E. D. 1879 B, p. 59. (Eucrotaphus.)
1884 M, p. 517. (Syn. of Eucrotaphus jacksoni.)
King, C. 1878 A, p. 424.
Leidy, J. 1873 B, p. 318 (Syn.? of Oreodon bullatus); ?pl. vii, fig. 12 (Oreodon culbertsoni).
Marsh, O. C. 1875 B, p. 250.
1884 F, figs. 73, 162, 163.
Matthew, W. D. 1899 A, p. 64.
Trouessart, E. L. 1898 A, p. 836. (Syn. of Eucrotaphus jacksoni.)
Miocene (John Day); Oregon.

Eporeodon pacificus (Cope).

Cope, E. D. 1884 M, p. 519. (Eucrotaphus jacksoni pacificus.)
1884 H, p. 23. (Eucrotaphus.)
1885 B, p. 484. (Eucrotaphus.)
1888 X, p. 1094. (Eucrotaphus.)
Matthew, W. D. 1899 A, p. 64. (E. occidentalis var. pacificus.)
Trouessart, E. L. 1898 A, p. 836. (Eucrotaphus.)
Miocene (John Day); Oregon.

Eporeodon socialis Marsh.

Marsh, O. C. 1885 B, figs. 128, 129.
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 213.
Miocene (John Day); Oregon.

Eporeodon trigonocephalus (Cope).

Cope, E. D. 1884 M, p. 514. (Eucrotaphus.)
1884 T, p. 281. (Eucrotaphus.)
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 213.
Trouessart, E. L. 1898 A, p. 836. (Eucrotaphus.)
Miocene (John Day); Oregon.

MESOREODON Scott. Type *M. chelonyx* Scott.

Scott, W. B. 1893 B, p. 661.
1895 C, pp. 125, 164.

Mesoreodon chelonyx Scott.

Scott, W. B. 1893 B, p. 661.
Matthew, W. D. 1899 A, p. 60.
Roger, O. 1896 A, p. 214.
Scott, W. B. 1895 C, p. 125, pl. iii, fig. 29; pl. iv, figs. 32–34; pl. v, figs. 35–42; pl. vi, figs. 46, 47.
Trouessart, E. L. 1898 A, p. 836.
Miocene (Deep River); Montana.

Mesoreodon intermedius Scott.

Scott, W. B. 1893 B, p. 661.
Matthew, W. D. 1899 A, p. 60.
Roger, O. 1896 A, p. 214.
Scott, W. B. 1895 C, p. 145, pl. v, figs. 43, 44.
Trouessart, E. L. 1898 A, p. 836.
Miocene (Deep River); Monta:

MERYCOCHŒRUS Leidy. Type *M. proprius* Leidy.

Leidy, J. 1858 E, p. 24.
Bettany, G. T. 1876 A.
Cope, E. D. 1884 H, p. 23.
1884 M, pp. 504, 520.
1884 T.
Cope, E. D. 1885 B, p. 484.
1888 X, p. 1093.
1889 C.
1889 G, p. 113.
Leidy, J. 1869 A, p. 110.

Leidy, J. 1870 P, p. 111.
1871 C, p. 347.
1873 B, pp. 199, 202.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1327.
Osborn, H. F. 1901 A, p. 46.
Scott, W. B. 1889 C, p. 75.
1890 B, p. 340.
1891 D, p. 90.
1892 A, p. 435.
1894 E.
1895 C, p. 165.
Scott and Osborn 1890 B, p. 73.
Steinmann and Döderlein 1890 A, p. 800.
Trouessart, E. L. 1898 A, p. 837.
Zittel, K. A. 1893 B, p. 355.

Merycochœrus chelydra Cope.

Cope, E. D. 1884 M, pp. 521, 523.
1884 T, p. 281.
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 214.
Trouessart, E. L. 1898 A, p. 838.
Miocene (John Day); Oregon.

Merycochœrus cœnopus Scott.

Scott, W. B. 1890 B, p. 346, pl. xvi, figs. 33, 34.
Matthew, W. D. 1899 A, p. 72. (M. cenopus.)
Roger, O. 1896 A, p. 214.
Scott and Osborn 1890 B, p. 73. (M. cenopus.)
Trouessart, E. L. 1898 A, p. 838.
Miocene (Loup Fork); Nebraska.

Merycochœrus laticeps Douglass.

Douglass, E. 1900 B, p. 428 figs. 1-3.
Miocene (Loup Fork); Montana.

Merycochœrus leidyi Bettany.

Bettany, G. T. 1876 A, p. 270, pl. xviii.
Cope, E. D. 1879 B, p. 59.
1884 M, pp. 521, 523.
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 214.
Trouessart, E. L. 1898 A, p. 838.
Miocene (John Day); Oregon.

Merycochœrus macrostegus Cope.

Cope, E. D. 1884 M, pp. 521, 526.
1884 T, p. 281.
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p 214.
Scott, W. B. 1890 B, pl. xiv, figs. 8, 9.
Trouessart, E. L. 1898 A, p. 838.
Miocene (John Day); Oregon.

Merycochœrus montanus Cope.

Cope, E. D. 1884 M, pp. 521, 531.
1884 H, p. 23.
1884 T, p. 282.
1885 B, p. 484.
1886 B, p. 359.
1886 H.
1889 G, p. 113, fig. 9.
1895 C, p. 151.
Matthew, W. D. 1899 A, p. 72.
Roger, O. 1896 A, p. 214.
Scott, W. B 1890 B, p. 342, text figs. v, vi.
1893 B, p. 659.
Trouessart, E. L. 1898 A, p. 838.
Miocene (Loup Fork): Montana.

Merycochœrus obliquidens Cope.

Cope, E. D. 1886 H, p. 368.
1886 B, p. 359.
Matthew, W. D. 1899 A, p. 72.
Roger, O. 1896 A, p. 214.
Trouessart, E. L. 1898 A, p. 838.
Miocene (Loup Fork); Oregon.

Merycochœrus proprius Leidy.

Leidy, J. 1858 E, p. 24.
Cope, E. D. 1884 M, pp. 521, 535.
1884 T, p. 282.
Hayden, F. V. 1858 B, p. 157.
King, C. 1878 A, p. 411.
Leidy, J. 1869 A, pp. 110, 380, pl. x.
1870 O, p. 109.
1871 C, p. 347.
1873 B, p. 201.
Matthew, W. D. 1899 A, p. 72.
Trouessart, E. L. 1898 A, p. 838.
Miocene (Loup Fork); Wyoming.

Merycochœrus rusticus Leidy.

Leidy, J. 1870 O, p. 109.
Cope, E. D. 1884 M, pp. 521, 535.
1884 T, p. 282.
Leidy, J. 1871 C, p. 347.
1873 B, pp. 199, 319, pl. iii, figs. 1-3; pl. vii, figs. 1-5; pl. xx, figs. 9-11.
Matthew, W. D. 1899 A, p. 72.
Roger, O. 1896 A, p. 214.
Scott, W. B. 1890 B, pp. 341, 348. (Merychyus.)
Trouessart, E. L. 1898 A, p. 838.
Miocene (Loup Fork); Wyoming.

Merycochœrus superbus (Leidy).

Leidy, J. 1870 P, p. 111. (Oreodon.)
Bettany, G. T. 1876 A, p. 269, pl. xvii. (M. temporalis.)
Cope, E. D. 1879 B, p. 59. (Eucrotaphus.)
1884 M, pp. 521, 522.
1884 T, p. 281.
1888 X, p. 1094, pl. xxvi.
King, C. 1878 A, p. 424. (Eporeodon.)
Leidy, J. 1871 C, p. 346. (Oreodon.)
1873 B, pp. 211, 319, pl. i, fig. 1; pl. ii, fig. 16; pl. vii, figs. 7-11. (Oreodon.)
Marsh, O. C 1875 B, p. 250. (Eporeodon.)
Matthew, W. D. 1899 A, p. 64.
Roger, O. 1896 A, p. 214.
Scott, W. B. 1890 B, p. 339, pl. xiv, fig. 10.
Trouessart, E. L. 1898 A, p. 838.
Miocene (John Day); Oregon.

Merycochœrus sp. indet.

Leidy, J. 1873 B, p. 208, pl. xx, figs. 9-11.

Merychyus Leidy. Type *M. elegans* Leidy.

Leidy, J. 1858 E, p. 25.
Bettany, G. T. 1876 A.
Cope, E. D. 1878 H, p. 380. (Ticholeptus, type *T. zygomaticus.*)
1878 P. (Ticholeptus.)
1884 M, pp. 504, 535.
1884 T.
1885 B, p. 484.
1887 B, p. 386.
1887 S, p. 85.
1888 X, p. 1093.
Dawkins, W. B. 1870 A, p. 232.
Hayden, F. V. 1858 B, p. 157.
Leidy, J. 1869 A, p. 115.
1871 C, p. 347.
1873 B, pp. 202, 213.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1327.
Scott, W. B. 1889 C, p. 75.
1890 B, p. 347, pl. xiv, fig. 36.
1891 A, p. 53.
1891 D, p. 90.
1892 A, p. 435.
1895 C, p. 165.
Steinmann and Döderlein 1890 A, p. 800.
Trouessart, E. L. 1898 A, p. 837.
Zittel, K. A. 1893 B, p. 355.

Merychyus arenarum Cope.

Cope, E. D. 1884 M, pp. 536, 537, 540. (With subsp. leptorhynchus.)
1884 H, p. 23.
1884 T, p. 282.
1885 B, p. 484.
1888 X, p. 1080, pl. xxvi.
Matthew, W. D. 1899 A, p. 72.
Roger, O. 1896 A, p. 214.
Scott, W. B. 1890 B, pl. xiii, fig. 7; pl. xvi, figs. 30–32.
Trouessart, E. L. 1898 A, p. 837.
Miocene (Loup Fork); Wyoming.

Merychyus elegans Leidy.

Leidy, J. 1858 E, p. 24.
Bettany, G. T. 1876 A.
Cope, E. D. 1874 B, p. 529.
1874 P, p. 19.
1884 M, pp. 536, 545.
1884 T, p. 282.
King, C. 1878 A, p. 430.
Leidy, J. 1869 A, pp. 118, 380, pl. xi, figs. 1–11.
1871 C, p. 348.
1873 B, p. 201.
Matthew, W. D. 1899 A, p. 72.
Roger, O. 1896 A, p. 214.
Scott and Osborn 1890 B, p. 72.
Trouessart, E. L. 1898 A, p. 837.
Miocene (Loup Fork); Nebraska.

Merychyus major Leidy.

Leidy, J. 1858 E, p. 26.
Cope, E. D. 1874 B, p. 529.
1874 P, p. 19.
1884 M, pp. 536, 545.
1884 T, p. 282.
Hayden, F. V. 1858 B, p. 157.
Leidy, J. 1869 A, pp. 121, 380, pl. xi, figs. 15, 16.
1870 O, p. 109.
1871 C, p. 348.
1873 B, p. 201.
Matthew, W. D. 1899 A, p. 72.
Roger, O. 1896 A, p. 214.
Trouessart, E. L. 1898 A, p. 837.
Zittel, K. A. 1893 B, p. 355.
Miocene (Loup Fork); Nebraska, Colorado.

Merychyus medius Leidy.

Leidy, J. 1858 E, p. 26.
Cope, E. D. 1875 F, p. 70.
1877 K, p. 324.
1884 M, pp. 536, 545.
1884 T, p. 282.
Dawkins, W. B. 1870 A, p. 232.
Hayden, F. V. 1858 B, p. 157.
Leidy, J. 1869 A, pp. 119, 121, 380, pl. xi, figs. 12–14.
1870 O, p. 109.
1871 C, p. 348.
1873 B, p. 201.
Matthew, W. D. 1899 A, p. 72.
Roger, O. 1896 A, p. 214.
Trouessart, E. L. 1898 A, p. 837.
Miocene (Loup Fork); Nebraska, New Mexico, Colorado.

Merychyus pariogonus Cope.

Cope, E. D. 1884 M, pp. 536, 542.
1884 T, p. 282.
1886 B, p. 359.
1886 H.
Matthew, W. D. 1899 A, p. 72.
Roger, O. 1896 A, p. 214.
Scott, W. B. 1893 B, p. 659.
1895 C, p. 148.
Trouessart, E. L. 1898 A, p. 837.
Miocene (Loup Fork); Wyoming, Montana.

Merychyus zygomaticus Cope.

Cope, E. D. 1878 P, p. 129. (Ticholeptus.)
1878 H, p. 380. (Ticholeptus.)
1884 M, pp. 536, 545.
1884 T, p. 282.
1886 B, p. 359.
1886 H.
Matthew, W. D. 1899 A, p. 72.
Roger, O. 1896 A, p. 214.
Scott, W. B. 1893 B, p. 659.
1895 C, p. 146, pl. v, fig. 45.
Trouessart, E. L. 1898 A, p. 837.
Miocene (Loup Fork); Montana.

Dr. W. D. Matthew (1899 A, p. 72) has attributed to Cope a species, *Merychyus euryops*, but search has failed to discover the name in any of Cope's papers. It is probably a manuscript name only.

LEPTAUCHENIA Leidy. Type *L. decora* Leidy.

Leidy, J. 1856 I, p. 88.
Cope, E. D. 1884 M, pp. 504, 546.
1887 B, p. 386.
1888 X, p. 1093.
Leidy, J. 1858 E, p. 25.
1869 A, p. 122.
1871 C, p. 348.
Matthew, W. D. 1899 A, p. 24.
Nicholson and Lydekker 1889 A, p. 1327.
Schlosser, M. 1886 B, p. 49.
Scott, W. B. 1890 B, p. 353.
1892 A, p. 435.
1895 C, p. 166.
1899 A, p. 96.
Trouessart, E. L. 1898 A, p. 838.
Zittel, K. A. 1893 B, p. 355.

Leptauchenia decora Leidy.

Leidy, J. 1856 I, p. 88.
Cope, E. D. 1884 M, p. 546.
Hayden, F. V. 1858 B, p. 157.
Leidy, J. 1869 A, pp. 127, 381, pl. xii, figs. 21, 22.
1871 C, p. 348.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 215.
Trouessart, E. L. 1898 A, p. 838.
Oligocene (White River); South Dakota, Colorado.

Leptauchenia major Leidy.

Leidy, J. 1856 J, p. 163.
Cope, E. D. 1884 M, p. 546.
Hayden, F. V. 1858 B, p. 157.
King, C. 1878 A, p. 411.
Leidy, J. 1869 A, pp. 124, 380, pl. xii, figs. 1–5.
1871 C, p. 348.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 215.
Scott, W. B. 1890 B, pl. xv, figs. 15, 16.
Trouessart, E. L. 1898 A, p. 838.
Oligocene (White River); South Dakota.

Leptauchenia nitida Leidy.

Leidy, J. 1869 A, pp. 129, 381, pl. xii, figs. 21, 22.
Cope, E. D. 1884 M, p. 546.
1884 T, p. 282.
Leidy, J. 1871 C, p. 348.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 215.
Scott, W. B. 1890 B, pl. xvi, fig. 35.
Trouessart, E. L. 1898 A, p. 838.
Oligocene (White River); South Dakota.

CYCLOPIDIUS Cope. Type *C. simus* Cope.

Cope, E. D. 1878 C, p. 221.
1878 C, p. 219 (Pithecistes, type *P. brevifacies*); p. 220 (Brachymeryx, type *B. feliceps*=Cyclopidius simus, juv.).
1878 L. (Cyclopidius, Brachymeryx, Pithecistes.)
1884 M. pp. 504, 546 (Cyclopidius); pp. 504, 557 (Pithecistes).
1884 T.
1886 B, p. 359.
1887 B, p. 386. (Cyclopidius, Pithecistes.)
1888 X, p. 1093. (Cyclopidius, Pithecistes.)
Matthew, W. D. 1899 A, pp. 24, 73.
Nicholson and Lydekker 1889 A, p. 1327. (Cyclopidius, Pithecistes.)
Scott, W. B. 1890 B, p. 356 (Cyclopidius); p. 357 (Pithecistes).
1891 B, p. 370. (Pithecistes.)
1891 D, p. 90. (Cyclopidius, Pithecistes.)
1892 A, p. 435. (Cyclopidius, Pithecistes.)
1895 C, p. 162 (Cyclopidius); p. 164 (Pithecistes).
Steinmann and Döderlein 1890 A, p. 800.
Zittel, K. A. 1893 B, p. 356. (Cyclopidius, Pithecistes.)

Cyclopidius brevifacies (Cope).

Cope, E. D. 1878 C, p. 219. (Pithecistes.)
1884 M, p. 558. (Pithecistes.)
1884 T, p. 212. (Pithecistes.)
1886 B, p. 359. (Pithecistes.)
1886 H. (Pithecistes.)
Matthew, W. D. 1899 A, p. 73. (Cyclopidius.)
Roger, O. 1896 A, p. 215. (Pithecistes.)
Scott, W. B. 1890 B, pl. xv, figs. 20, 21. (Pithecistes.)
1893 B, p. 659. (Pithecistes.)
Trouessart, E. L. 1898 A, p. 839. (Pithecistes.)
Miocene (Loup Fork); Montana.

Cyclopidius decedens (Cope).

Cope, E. D. 1884 M, p. 558. (Pithecistes.)
1884 T, p. 282. (Pithecistes.)
1886 B, p. 359. (Pithecistes.)
1886 H. (Pithecistes.)
Matthew, W. D. 1899 A, p. 73. (Cyclopidius.)
Roger, O. 1896 A, p. 215. (Pithecistes.)
Scott, W. B. 1893 B, p. 659. (Pithecistes.)
Trouessart, E. L. 1898 A, p. 839. (Pithecistes.)
Miocene (Loup Fork); Montana.

Cyclopidius emydinus Cope.

Cope, E. D. 1884 M, p. 553.
1884 T, p. 282.
1886 B, p. 359.
1886 H.
1888 X, pl. xxviii.
Roger, O. 1896 A, p. 215.
Scott, W. B. 1890 B, pl. xv, figs. 17–19.
1893 B, p. 659.
Trouessart, E. L. 1898 A, p. 839.
Zittel, K. A. 1893 B, p. 356, fig. 291.
Miocene (Deep River); Montana.

Cyclopidius heterodon Cope.

Cope, E. D. 1878 C, p. 222. (Cyclopidius.)
1884 M, p. 559. (Pithecistes.)
1884 T, p. 282. (Pithecistes.)

Cope, E. D. 1886 B, p. 359. (Pithecistes.)
1886 H. (Pithecistes.)
Matthew, W. D. 1899 A, p. 73. (Cyclopidius.)
Roger, O. 1896 A, p. 215. (Pithecistes.)
Scott, W. B. 1893 B, p. 659. (Pithecistes.)
Trouessart, E. L. 1898 A, p. 839. (Pithecistes.)
Miocene (Loup Fork); Montana.

Cyclopidius incisivus Scott.

Scott, W. B. 1893 B, p. 659.
Matthew, W. D. 1899 A, p. 73.
Roger, O. 1896 A, p. 215.
Scott, W. B. 1895 C, p. 163.
Trouessart, E. L. 1898 A, p. 839.
Miocene (Loup Fork); Montana.

Cyclopidius simus Cope.

Cope, E. D. 1878 C, p. 221.
1878 C, p. 220. (Brachymeryx feliceps.)
1884 M, p. 547.
1884 T, p. 282.
1886 H.
Roger, O. 1896 A, p. 215.
Scott, W. B. 1893 B, p. 659.
Trouessart, E. L. 1898 A, p. 839.
Miocene (Deep River); Montana.

HADROHYUS Leidy. Type *H. supremus* Leidy.

Leidy, J. 1871 M, p. 248.
1873 B, p. 222.
A genus of uncertain position; founded on unsatisfactory material.

Hadrohyus supremus Leidy.

Leidy, J. 1871 M, p. 248.
1873 B, pp. 222, 331, pl. xvii, fig. 26.
Miocene; Oregon.

LEPTOMERYCINÆ.

Cope, E. D. 1879 B, p. 66. (Hypertragulidæ, in part.)
1889 G, p. 121. (Hypisodontidæ.)
Roger, O. 1896 A, p. 226.
Scott, W. B. 1899 A, p 15. (Leptomerycidæ.)
Trouessart, E. L. 1898 A, p. 863.
Zittel, K. A. 1893 B, p. 389.

LEPTOMERYX Leidy. Type *L. evansi* Leidy.

Leidy, J. 1853 D, p. 394.
Cope, E. D. 1873 T, p. 8. (Trimerodus, type *T. cedrensis.*)
1874 E, p. 110.
1874 P, p. 26.
1879 A, p. 44.
1884 H, p. 23.
1884 DD.
1885 B, p. 484.
1887 B, p. 389.
1889 G, p. 121.
Farr, M. S. 1896 A, p. 163.
Flower and Lydekker 1891 A, p. 307.
Leidy, J. 1869 A, p. 165.
1871 C, p. 351.
Lydekker, R. 1887 A, p. 332.
Nicholson and Lydekker 1889 A, p. 1333.
Osborn and Wortman 1892 B.
Rütimeyer, L. 1883 A, p. 98.
Scott, W. B. 1891 A, p. 3.
1891 B, p. 342.
1891 C, p. 63.
1892 A, p. 436.
1895 A.
1898 C, p. 77.
1899 A, pp. 15–111.
Steinmann and Döderlein 1890 A, p. 802.
Wortman, J. L. 1893 A.
Zittel, K. A. 1893 B, p. 389.

Leptomeryx esulcatus Cope.

Cope, E. D. 1889 I, p. 154.
1891 A, p. 22, pl. xiv, fig. 5.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 226.
Trouessart, E. L. 1898 A, p. 863.
Oligocene (White River); Canada.

Leptomeryx evansi Leidy.

Leidy, J. 1853 D, p. 394.
Cope, E. D. 1873 T, p. 8. (Trimerodus cedrensis.)
1873 CC, p. 14. (Trimerodus cedreusis.)
1874 B, pp. 464, 503.
1874 P, p. 27.
1879 B, p. 66.
1879 D, p. 63.
1884 H, p. 23.
1885 B, p. 484.
1889 G, p. 122.
Hayden, F. V. 1858 B, p. 157.
King, C. 1878 A, p. 411.
Leidy, J. 1854 E, p. 157.
1857 D, p. 176. (Dorcatherium.)
1869 A, pp. 165, 383, pl. xiv, figs 1–8.
1870 P, p. 112.
1871 C, p. 351.
1873 B, pp. 216, 317. (Except John Day specimens.)
Lydekker, R. 1887 A, p. 333.
Major, Fors. 1873 A, p. 105.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 226.
Scott, W. B. 1891 B, p. 343, figs. D–I.
1891 A, p. 15, pl. i, figs. 1, 2.
Scott and Osborn 1887 B, p. 156.
Trouessart, E. L. 1898 A, p. 863.
Oligocene (White River); South Dakota, Colorado, Nebraska.

Leptomeryx mammifer Cope.

Cope, E. D. 1886 U, p. 84.
Ami, H. M. 1891 A.
Cope, E. D. 1885 H, p. 163. (No description.)
1889 I, p. 154.

Cope, E. D. 1891 A, p. 22, pl. xiv, figs. 6, 7.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 226.
Trouessart, E. L. 1898 A, p. 863.
Oligocene (White River); Canada, Colorado.

Leptomeryx semicinctus Cope.

Cope, E. D. 1889 I, p. 154.
1891 A, p. 23, pl. xiv, fig. 8.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 226.
Trouessart, E. L. 1896 A, p. 863.
Oligocene (White River); Canada.

HYPISODUS Cope. Type *H. ringens* Cope.

Cope, E. D. 1873 CC, p. 5.
1873 R, p. 419.
1874 B, p. 501.
1874 E.
1884 H, p. 25.
1884 DD, p. 1036.
1885 B, p. 486.
1887 B, p. 389.
1889 G, p. 121.
Scott, W. B. 1891 B, p. 351.
1899 A, pp. 19, 112.
Zittel, K. A. 1893 B, p. 389.

Hypisodus minimus Cope.

Cope, E. D. 1873 T, p. 8. (Leptauchenia.)
Cope, E. D. 1873 R, p. 419.
1873 CC, p. 7 (H. ringens); p. 14 (Leptauchenia minima.)
1874 B, p. 501. (H. minimus, with H. cingens as synonym.)
1874 P, p. 26.
1884 H, p. 25.
1885 B, p. 486.
1889 G, p. 122.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 226.
Scott and Osborn 1887 B, p. 157.
Trouessart, E. L. 1898 A, p. 863. (With H. cingens as synonym.)
Oligocene (White River); Colorado.

OROMERYX Marsh. Type *O. plicatus* Marsh.

Marsh, O. C. 1894 L, p. 269.
Cope, E. D. 1894 E, p. 869.
Marsh, O. C. 1877 E, p. 364. (Insufficient definition; no species.)
Scott, W. B. 1898 C, pp. 77, 78.
1899 A, pp. 83, 114.
Scott and Osborn 1887 A, p. 259. (Name only.)
Zittel, K. A. 1893 B, p. 361.

Oromeryx plicatus Marsh.

Marsh, O. C. 1894 L, p. 269, fig. 23.
Matthew, W. D. 1899 A, p. 50.
Roger, O. 1896 A, p. 215.
Trouessart, E. L. 1898 A, p. 839.
Eocene (Uinta); Utah.

CAMELOMERYX Scott. Type *C. longiceps* Scott.

Scott, W. B. 1898 C, p. 77.
1899 A, pp. 67, 82, 114.

Camelomeryx longiceps Scott.

Scott, W. B. 1898 C, p. 78.
Matthew, W. D. 1899 A, p. 50.
Scott, W. B. 1899 A, p. 67, pl. iii, figs. 15-18.
Wortman, J. L. 1898 A, p. 97. (Bunomeryx montanus, in part.)
Eocene (Uinta); Wyoming.

LEPTOREODON Wort. Type *L. marshi* Wort.

Wortman, J. L. 1898 A, p. 95.
Scott, W. B. 1898 C, p. 75. (Merycodesmus, type *M. gracilis* Scott.)
1899 A, pp. 51, 64, 113.

Leptoreodon gracilis Scott.

Scott, W. B. 1898 C, p. 76. (Merycodesmus.)
Matthew, W. D. 1899 A, p. 50. (Syn. of L. marshi.)
Scott, W. B. 1899 A, pp. 52, 67, pl. ii, figs. 10-14.
Eocene (Uinta); Utah.

Leptoreodon marshi Wort.

Wortman, J. L. 1898 A, p. 95, fig. 1.
Matthew, W. D. 1899 A, p. 50.
Scott, W. B. 1899 A, pp. 52, 67.
Trouessart, E. L. 1899 A, p. 1348.
Eocene (Uinta); Utah.

STIBARUS Cope. Type *S. obtusilobus* Cope.

Cope, E. D. 1873 T, p. 3.
1874 B, p. 503.
1886 C, pp. 614, 619.
1893 G, p. 148:
Zittel, K. A. 1893 B, p. 361.

The systematic position of this genus is doubtful.

Stibarus obtusilobus Cope.

Cope, E. D. 1873 T, p. 3.
Cope, E. D. 1873 CC, p. 9.
1874 B, p. 503.
1886 C, p. 618. ("Stibarus.")
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 215.
Trouessart, E. L. 1898 A, p. 840.
Oligocene (White River); Colorado.

PROTOCERATINÆ.

Zittel, K. A. 1893 B, p. 405.
Lydekker, R. 1896 B, p. 376. (Protoceratidæ.)
Marsh, O. C. 1891 A, p. 82. (Protoceratidæ.)
    1897 D, p. 165. (Protoceratidæ.)
Osborn, H. F. 1892 B, p. 353. (Protoceratidæ.)
Osborn, H. F. 1893 I, p. 322. (Protoceratidæ.)
Roger, O. 1896 A, p. 237.
Scott, W. B. 1899 A, p. 19.
Woodward, A. S. 1898 B, p. 361. (Protoceratidæ.)

PROTOCERAS Marsh. Type *P. celer* Marsh.

Marsh, O. C. 1891 A, p. 81.
Cope, E. D. 1893 G, p. 147.
Lydekker, R. 1896 B, p. 376.
Marsh, O. C. 1897 D, p. 165.
Osborn, H. F. 1893 D, p. 42.
    1893 E.
    1893 I, p. 321.
Osborn and Wortman 1892 B, p. 351.
Scott, W. B. 1895 A.
    1898 C. p. 77.
    1899 A, pp. 19-112.
Woodward, A. S. 1898 B, p. 362.
Wortman, J. L. 1893 A.
    1898 A, p. 99.
Zittel, K. A. 1893 B, p. 405.

Protoceras celer Marsh.

Marsh, O. C. 1891 A, p. 81.
Cope, E. D. 1893 G, p. 147, pls. i, ii.
Dean, B. 1893 A.
Marsh, O. C. 1893 D, p. 407, pl. vii.
    1897 D, p. 169, pls. ii-v; pl. vi, fig. 1; pl. vii, figs. 3, 4; text figs. 4, 6, 7.
Matthew, W. D. 1899 A, p. 61.
Osborn, H. F. 1893 I, p. 321, figs. 1-3.
    1893 L, p. 128.
    1896 C, pp. 712, 715, illus. 8.
    1898 Q, p. 16.
Osborn and Wortman 1892 B, pp. 353-371, figs. 1-6.
Roger, O. 1896 A, p. 236.
Scott, W. B. 1895 A, pls. xx-xxii.
Trouessart, E. L. 1898 A, p. 864.
Woodward, A. S. 1898 B, p. 362, fig. 206.
Zittel, K. A. 1893 B, p. 405, fig. 388.
    Oligocene (White River); South Dakota.

Protoceras comptus Marsh.

Marsh, O. C. 1894 F, p. 93.
    1897 D, p. 172, pl. vi, fig. 2.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 237.
Trouessart, E. L. 1898 A, p. 864.
    Oligocene (White River); South Dakota.

Protoceras nasutus Marsh.

Marsh, O. C. 1897 D, p. 168; fig. 5.
Matthew, W. D. 1899 A, p. 61.
    Oligocene (White River); South Dakota.

CALOPS Marsh. Type *C. cristatus* Marsh.

Marsh, O. C. 1894 F, p. 94.
    1897 D, p. 174.

Calops consors Marsh.

Marsh, O. C. 1897 D, p. 175, pl. vii, figs. 1, 2.
Matthew, W. D. 1899 A, p. 61.
    Oligocene (White River); South Dakota.

Calops cristatus Marsh.

Marsh, O. C. 1894 F, p. 94.
    1894 L, p. 273.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 237.
Trouessart, E. L. 1898 A, p. 864.
    Oligocene (White River); South Dakota.

CAMELIDÆ.

Ameghino, F. 1889 A, p. 579.
Baur, G. 1885 I, p. 196.
Branco, W. 1897 A, p. 24.
Cope, E. D. 1874 B, p. 464.
    1874 M.
    1875 Q.
    1876 G, p. 146.
    1877 K, p. 342.
    1881 J, p. 546.
    1884 G, p. 16.
    1884 H, p. 26.
    1886 C.
    1887 B, pp. 379, 391.
    1887 S, p. 222.
    1888 X, p. 1080.
    1889 C,
    1889 G, p. 119.
Flower, W. H. 1876 B, xiii, p. 328.
Flower and Lydekker 1891 A, p. 295.
Gill T. 1872 B, p. 71.
Huxley, T. H. 1872 A, p. 328.
Leidy, J. 1871 C, p. 349.
Lydekker, R. 1885 C, p. 139.
    1896 B, p. 163.
Marsh, O. C. 1877 E.
Matthew, W. D. 1899 A, p. 22, *et seq.*
Nicholson and Lydekker 1889 A, p. 1334.
Osborn, H. F. 1900 C, p. 568.
Owen, R. 1845 B, p. 528.
    1868 A, p. 349.
    1870 C.
Roger, O. 1896 A, p. 215.
Rütimeyer, L. 1877 A.
    1878 A, p. 19.
    1883 A, p. 9. (Camelina.)
Schmidt, O. 1886 A, p. 154.
Scott, W. B. 1891 A.
    1899 A, pp. 22, 116.
Steinmann and Döderlein 1890 A, p. 800.
Tornier, G. 1888 A.
Wilckens, M. 1885 C.
Wortman, J. L. 1898 A.
Zilliken, J. E. 1879 A.
Zittel, K. A. 1893 B, p. 357.

LEPTOTRAGULINÆ.

Cope, E. D. 1879 B, p. 66. (Hypertragulidæ, in part.)
Roger, O. 1896 A, p. 215.
Trouessart, E. L. 1898 A, p. 839.
Zittel, K. A. 1893 B, p. 361.

LEPTOTRAGULUS Scott and Osb. Type *L. proavus* Scott and Osb.

Scott and Osborn 1887 A, p. 258.
Cope, E. D. 1889 G, p. 119.
    1890 C, p. 471.
    1894 E, p. 869.
Flower and Lydekker 1891 A, p. 304.
Nicholson and Lydekker 1889 A, p. 1334.
Osborn, H. F. 1893 D, p. 42.
Scott, W. B. 1890 A, p. 479.
    1891 A, pp. 10, 47.
    1892 A, p. 435.
    1898 C, p. 75.
    1899 A, pp. 47, 113.
Steinmann and Döderlein 1890 A, p. 800.
Trouessart, E. L. 1898 A, p. 840.
Wortman, J. L. 1898 A, p. 103. (Parameryx, in part.)
Zittel, K. A. 1893 B, p. 361.

Leptotragulus proavus Scott and Osb.

Scott and Osborn 1887 A, p. 258.
Matthew, W. D. 1899 A, p. 50.
Roger, O. 1896 A, p. 215.
Scott and Osborn 1890 A, p. 479, pl. vii, figs. 9–16.
Trouessart, E. L. 1898 A, p. 840.
Wortman, J. L. 1898 A, p. 103. (Parameryx.)
Zittel, K. A. 1893 B, p. 361.
    Eocene (Uinta); Wyoming.

PARAMERYX Marsh. Type *P. lævis* Marsh.

Marsh, O. C. 1894 L, p. 269.
Cope, E. D. 1894 E, p. 869. (Syn. of Leptotragulus.)
Marsh, O. C. 1877 E, p. 364. (Insufficient definition; no species.)
Scott, W. B. 1890 A, p. 488.
    1898 C, pp. 74, 77.
    1899 A, p. 47. (Syn.? of Leptotragulus.)
Scott and Osborn 1887 A, p. 259.
Wilckens, M. 1885 C, p. 418.
Wortmann, J. L. 1898 A, p. 103.

Parameryx lævis Marsh.

Marsh, O. C. 1894 L, p. 269, figs. 20, 21.
Cope, E. D. 1894 E, p. 869.
Matthew, W. D. 1899 A, p. 50.
Roger, O. 1896 A, p. 215. (Leptotragulus.)
Trouessart, E. L. 1898 A, p. 840. (Leptotragulus.)
    Eocene (Uinta); Wyoming.

Parameryx sulcatus Marsh.

Marsh, O. C. 1894 L, p. 269.
Matthew, W. D. 1899 A, p. 50.
Roger, O. 1896 A, p. 215. (Leptotragulus.)
Trouessart, E. L. 1898 A, p. 840. (Leptotragulus.)
    Eocene (Uinta); Wyoming.

ITHYGRAMMODON Osb., Scott, and Speir. Type *I. cameloides* Osb., Scott, and Speir.

Osborn, Scott, and Speir 1878 A, p. 56.
Cope, E. D. 1886 C, p. 613.
    1887 B, p. 391.
Scott, W. B. 1891 A, p. 9.
Zittel, K. A. 1893 B, p. 361.

Ithygrammodon cameloides Osb., Scott, and Speir.

Osborn, Scott, and Speir 1878 A, p. 57, pl. x, figs. 1–4.
Cope, E. D. 1886 C, p. 613.
    1887 B, p. 391.
Matthew, W. D. 1899 A, p. 47.
Roger, O. 1896 A, p. 215.
Trouessart, E. L. 1898 A, p. 840.
    Eocene (Bridger); Wyoming.

HYPERTRAGULUS Cope. Type *H. calcaratus* Cope.

Cope, E. D. 1873 R, p. 419.
    1874 B, p. 502.
    1874 E.
    1874 P, p. 26.
    1884 H, p. 24.
    1885 B, p. 485.
    1887 B, p. 389.
    1889 G, p. 120.
Flower and Lydekker 1891 A, p. 307.
Nicholson and Lydekker 1889 A, p. 1334.
Rütimeyer, L. 1883 A, p. 99.
Schlosser, M. 1886 B, p. 75.
Scott, W. B. 1891 D, p. 90.
    1895 A.
    1899 A, pp. 17–112.
Zittel, K. A. 1893 B, p. 389.

Hypertragulus calcaratus Cope.

Cope, E. D. 1873 T, p. 7. (Leptauchenia.)
    1873 R, p. 419. (H. calcaratus. H. tricostatus.)
    1873 CC, p. 14. (Leptauchenia.)
    1874 B, p. 502 (H. calcaratus); p. 503 (H. tricostatus.)
    1874 P, p. 26 (H. calcaratus); p. 27 (H. tricostatus.)
    1879 B, p. 66.
    1879 D, p. 63. (In part.)
    1884 H, p. 24. (In part.)
    1885 B, p. 485. (In part.)
Matthew, W. D. 1899 A, p. 61. (H. calcaratus, H. tricostatus.)

Roger, O. 1896 A, p. 226. (H. calc., H. tricostatus.)
Scott, W. B. ?1893 B, p. 659.
?1895 C, p. 167.
1899 A, p. 17. (In part.)
Trouessart, E. L. 1898 A, p. 863. (H. calc., H. tricostatus.)
Oligocene (White River); Colorado, South Dakota, Montana, Canada: (Deep River beds?) Montana?

Hypertragulus hesperius sp. nov.

Cope, E, D. 1879 B, p. 66. (H. calcaratus and Leptomeryx evansi, John Day specimens.)
1879 D, p. 63. (H. calcaratus, in part.)
1884 H, p. 24. (H. calcaratus, in part.)
1885 B, p. 485. (H. calcaratus, in part.)
1889 G, p. 122, pl. vi. (H. calcaratus.)
Leidy, J. 1873 B, pp. 216, 317. (Leptomeryx evansi, John Day specimens.)
Scott, W. B. ?1893 B, p. 659. (H. calcaratus.)
?1895 C, p. 167. (H. calcaratus.)
1899 A, p. 17, in part; pl. i, figs. 3, 4. (H. calcaratus.)
Miocene (John Day); Oregon: (Deep River?); Montana?

Hypertragulus transversus Cope.

Cope, E. D. 1889 I, p. 154.
1891 A, p. 22, pl. xiv, fig. 4.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 226.
Trouessart, E. L. 1898 A, p. 864.
Oligocene (White River); Canada.

POËBROTHERIINÆ.

Unless otherwise indicated, the following writers regard this group as a family, the Poebrotheriidæ.

Cope, E. D. 1874 P, p. 26.
1874 B, p. 464.
1884 M, p. 503.
1886 C, p. 613.
1887 B, pp. 379, 390.
Cope, E. D. 1888 X, p. 1080.
1889 G, p. 119.
Lydekker, R. 1885 C, p. 149.
Nicholson and Lydekker 1889 A, p. 1334.
Roger, O. 1896 A, p. 216. (Poëbrotherinæ.)
Trouessart, E. L. 1898 A, p. 840. (Poëbrotherinæ.)
Zittel, K. A. 1893 B, p. 361. (Poëbrotherinæ.)

PROTYLOPUS Wort. Type *P. petersoni* Wort.

Wortman, J. L. 1898 A, pp. 104, 136.
Scott, W. B. 1899 A, pp. 22–113.

Protylopus petersoni Wort.

Wortman, J. L. 1898 A, p. 104, figs. 3–6.
Matthew, W. D. 1899 A, p. 50.
Scott, W. B. 1899 A, p. 22, pl. ii, figs. 5–9.
Trouessart, E. L. 1899 A, p. 1349.
Eocene (Uinta); Utah.

POËBROTHERIUM Leidy. Type *P. wilsoni* Leidy.

Leidy, J. 1847 B, p. 322.
Baur, G. 1885 H, p. 196.
Branco, W. 1897 A, p. 24.
Bruce, A. T. 1883 A, p. 39.
Cope, E. D. 1874 B, p. 498.
1874 E.
1874 P, p. 26.
1875 Q, p. 262.
1876 G, p. 146.
1884 H, pp. 25, 26.
1885 B, pp. 482, 486.
1886 C, p. 618.
1887 B, p. 390.
Flower and Lydekker 1891 A, p. 304.
Leidy, J. 1848 A.
1852 J, p. 571. (Pœbrotherium.)
1852 L, p. 64. (Pœluotherium, misprint.)
1854 A, p. 113.
1869 A, p. 141.
1871 C, p. 350.
Lydekker, R. 1885 C, p. 149.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1334.
Schlosser, M. 1886 B, p. 48.
Scott, W. B. 1890 A, p. 483.
Scott, W. B. 1891 A.
1891 D, p. 90.
1892 A, p. 435.
1895 C, p. 179.
1898 C, p. 74. (Parameryx.)
1899 A, p. 23 *et seq.*
Steinmann and Döderlein 1898 A, p. 800.
Trouessart, E. L. 1898 A, p. 840.
Wilckens, M. 1885 C, p. 419.
Woodward, A. S. 1898 B, p. 358.
Wortman, J. L. 1893 A.
1898 A, pp. 110, 136.
Zittel, K. A. 1893 B, p. 362.

Poëbrotherium eximium sp. nov.

Wortman, J. L. 1898 A, p. 111, fig. 7. (P. wilsoni, not of Leidy.)
Oligocene (White River); South Dakota.

Poëbrotherium labiatum[1] Cope.

Cope, E. D. 1881 I, p. 271, fig. 4.
1881 J, p. 544, fig. 4.
1886 C, p. 618, fig. 7.
1887 S, p. 271, fig. 4.
Matthew, W. D. 1899 A, p. 60.

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[1] Trouessart refers to Bull. U. S. Geog. and Geol. Survey, vol. i, p. 26, as the place of original description of this species; but it is not mentioned there. Cope's reference to "Hayden iv, pl. cxv," is to an unpublished work.

Roger, O. 1896 A, p. 216.
Scott, W. B. 1891 A, pl. i, fig. 7; pl. ii, figs. 11-39; pl. iii, figs. 40-42, 48-51.
Trouessart, E. L. 1898 A, p. 840.
Wortman, J. L. 1898 A, p. 113, pl. xi, figs. C, D.
Zittel, K. A. 1893 B, pp. 359, 362, fig. 292.
Oligocene (White River); Colorado, South Dakota.

Poëbrotherium wilsoni Leidy.

Leidy, J. 1847 B, p. 322.
Cope, E. D. 1874 B, p. 500.
1874 P, p. 24.
1886 C, p. 618, figs. 3, 9.
1889 G, 114, fig. 12. (P. vilsoni.)
Hayden, F. V. 1858 B, p. 157.
King, C. 1878 A, p. 411.
Leidy, J. 1848 A.
1852 J, p. 571. (Pœbrotherium.)
Leidy, J. 1852 L, p. 64. (Pœluotherium, misprint.)
1854 A, p. 19, pl. i, figs. 1-4.
1854 E, p. 157.
1869 A, pp. 141, 381, pl. xiii, figs. 5-7. (Pœbrotherium.)
1871 C, p. 350.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 216.
Scott, W. B. 1890 A, p. 483.
1891 A, pl. i, figs. 1-3, 8, 9; pl. ii, fig. 1; pl. iii, figs. 44-47.
Trouessart, E. L. 1898 A, p. 840.
Wilckens, M. 1885 C, p. 419.
Wortman, J. L. 1898 A, p. 111, figs. 8-10; pl. xi, fig. B.
Zittel, K. A. 1893 B, p. 362, fig. 294.
Oligocene (White River); South Dakota, Nebraska.

PROTOMERYX Leidy. Type *P. halli* Leidy.

Leidy, J. 1856 J, p. 163.
Cope, E. D. 1886 C, p. 618 (Gomphotherium, type *G. sternbergii;* preoccupied by Gomphotherium Burmeister).
Leidy, J. 1869 A, p. 160.
1871 C, p. 350.
Nicholson and Lydekker 1889 A, p. 1334. (Gomphotherium.)
Scott, W. B. 1891 A. (Protomeryx, Gomphotherium.)
1899 A, pp. 17, 46, 113. (Gomphotherium.)
Wilckens, M. 1885 C, p. 421.
Wortman, J. L. 1898 A, pp. 114, 137. (Gomphotherium.)
Zittel, K. A. 1893 B, p. 362. (Gomphotherium.)

In case future discoveries shall prove that Cope's *Gomphotherium sternbergii* is generically different from Leidy's *Protomeryx halli* a new generic name must replace *Gomphotherium.*

Protomeryx cameloides (Wort.)

Wortman, J. L. 1898 A, p. 115, pl. xi, fig. F; text figs. 15-19. (Gomphotherium.)
Douglass, E. 1900 A, p. 14. (Gomphotherium.)
Matthew, W. D. 1899 A, p. 64.
Trouessart, E. L. 1899 A, p. 1349. (Gomphotherium.)
Miocene (John Day); Oregon.

Protomeryx halli Leidy.

Leidy, J. 1856 J, p. 163.
Cope, E. D. 1874 P, p. 23. (Poëbrotherium.)
Hayden, F. V. 1858 B, p. 157.
King, C. 1878 A, p. 411.
Leidy, J. 1869 A, pp. 160, 382, pl. xv, figs. 8, 9.
1871 C, p. 351.
Matthew, W. D. 1899 A, p. 61.
Roger, O. 1896 A, p. 216.
Trouessart, E. L. 1898 A, p. 841.
Oligocene (White River); South Dakota, Colorado.

Protomeryx serus (Douglass).

Douglass, E. 1900, p. 12, pl. i, fig. 1. (Gomphotherium.)
Miocene: Montana.

Protomeryx sternbergii (Cope.)

Cope, E. D. 1879 B, p. 59. (Poëbrotherium.)
1884 H, p. 25. (Poëbrotherium.)
1885 B, p. 486. (Poëbrotherium.)
1886 C, p. 618, fig 10. (Gomphotherium.)
Matthew, W. D. 1899 A p. 64. (Protomeryx.)
Roger, O. 1896 A, p. 216. (Gomphotherium.)
Trouessart, E. L. 1898 A, p. 840. (Gomphotherium.)
Wortman, J. L. 1898 A, p. 115, pl. xi, fig. E; text figs. 11-14.
Zittel, K. A. 1893 B, p. 362, fig. 295. (Gomphotherium.)
Miocene (John Day); Oregon.

MIOLABINÆ nom. nov.

Cope, E. D. 1884 G, p. 16. (Protolabidæ.)
1886 C, p. 613. (Protolabidæ.)
1887 B, pp. 379, 391. (Protolabidæ.)
1888 X, p. 1080. (Protolabidæ.)
Roger, O. 1896 A, p. 217. (Protolabinæ.)
Trouessart, E. L. 1898 A, p. 841. (Protolabinæ)
Zittel, K. A. 1893 B, p. 363. (Protolabinæ.)

MIOLABIS Hay. Type *Protolabis transmontanus* Cope.

Hay, O. P. in Matthew, W. D. 1899 A, pp. 24, 74.
1899 A, p. 593.
Matthew, W. D. 1899 A, pp. 24, 74.
Wortman, J. L. 1898 A, p. 120. (Protolabis.)

Miolabis transmontanus (Cope).

Cope, E. D. 1879 B, p. 67. (Protolabis)
1879 N, p 131. (Protolabis.)
1886 B, p. 359. (Protolabis.)

Cope, E. D. 1886 C, p. 620, fig. 11. (Protolabis.)
1886 H. (Protolabis.)
1887 S, p. 223, fig. 13. (Protolabis.)
Hay, O. P. 1899 A, p. 593.
Matthew, W. D. 1899 A, p. 74.
Roger, O. 1896 A, p. 216. (Protolabis.)
Trouessart, E. L. 1898 A, p. 841. (Protolabis.)
Wortman, J. L. 1898 A, p. 122. (Protolabis.)
Zittel, K. A. 1893 B, p. 363, fig. 296. (Protolabis.)
Miocene (Loup Fork); Oregon.

PROCAMELUS Leidy. Type *P. occidentalis* Leidy.

Leidy, J. 1858 E, p. 23.
Baur, G. 1885 I.
Branco, W. 1897 A, p. 24.
Cope, E. D. 1873 R, p. 420.
1874 P, p. 20.
1875 F, p. 75.
1875 Q, p. 262.
1876 G, p. 144. (Procamelus; Protolabis, type *P. heterodontus.*)
1877 K, p. 325. (Procamelus, Protolabis.)
1884 G, p. 16.
1886 C, p. 612 (Procamelus); p. 613 (Protolabis).
1887 B, p. 391 (Protolabis); p. 393 (Procamelus).
1889 C.
1893 A, p. 36.
Gaudry, A. 1878 B, p. 123.
Leidy, J. 1859 A, p. 147 (Procamelus); p. 158 (Homocamelus, type *H. caninus*).
1871 C, p. 350. (Homocamelus.)
1873 A, p. 312. (Protocamelus.)
1873 B, p. 258 (Procamelus, or Protocamelus).
1873 C, p. 15. (Protocamelus.)
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1334. (Procamelus, Protolabis.)
Osborn, Scott, and Spier 1878 A, pl. x, fig. 6. (Protolabis.)
Schlosser, M. 1886 B, p. 48 (Procamelus, Protolabis); p. 49 (Homocamelus).
Scott, W. B. 1891 A, p. 49 (Procamelus, Protolabis); p. 50 (Homocamelus).
1891 D, p. 90. (Procamelus, Protolabis.)
1892 A, p. 436.
1895 C, p. 179. (Protolabis.)
Steinmann and Döderlein 1890 A, p. 800 (Protolabis); p. 801 (Procamelus).
Wilckens M. 1885 C, p. 421 (Procamelus); p. 424 (Homocamelus).
Woodward, A. S. 1898 B, p. 359.
Wortman, J. L. 1898 A, pp. 120, 122, 139.
Zittel, K. A. 1893 B, p. 363. (Protolabis, Procamelus.)

Procamelus altus Marsh.

Marsh, O. C. 1894 L, p. 274, figs. 33, 34.
Cope, E. D. 1894 E, p. 869. ("Procamelus.")
Matthew, W. D. 1899 A, p. 73. (Syn. of P. robustus.)
Roger, O. 1896 A, p. 216.
Trouessart, E. L. 1898 A, p. 841.
Miocene; Oregon, Colorado.

Procamelus angustidens Cope.

Cope, E. D. 1874 P, p. 20.
1874 B, p. 529.
1877 K, p. 327.
Cope, E. D. 1893 A, p. 37.
Matthew, W. D. 1899 A, p. 74.
Roger, O. 1896 A, p. 216.
Scott, W. B. 1891 A, p. 57, pl. i, fig. 6.
Trouessart, E. L. 1898 A, p. 842.
Wortman, J. L. 1898 A, p. 124. (Syn. of P. occidentalis.)
Miocene (Loup Fork); Colorado, Kansas.

Procamelus fissidens Cope.

Cope, E. D. 1876 G, p. 145.
1877 K, p. 327.
1893 A, p. 37.
Matthew, W. D. 1899 A, p. 74. (Miolabis?.)
Roger, O. 1896 A, p. 216.
Trouessart, E. L. 1898 A, p. 841.
Wilckens, M. 1885 C, p. 423.
Miocene (Loup Fork); Colorado.

Procamelus gracilis Leidy.

Leidy, J. 1858 F, p. 89.
Cope, E. D. 1875 F, p. 70.
1877 K, p. 328 (P. gracilis); p. 329, pl. liii, fig. 2; pl. lxxvi; pl. lxxvii, figs. 1-3; pl. lxxviii, figs. 1-9; pl. lxxix (P. occidentalis, *fide* Cope 1893 A, p. 37.)
1893 A, p. 37.
Hayden, F. V. 1858 B, p. 157.
Leidy, J. 1869 A, pp. 156, 382, pl. xiv, fig. 15.
1871 C, p. 350.
1873 A, p. 312. (Protocamelus.)
1873 C, p. 15. (Protocamelus.)
Leidy and Lucas 1891 A, p. 54.
Matthew, W. D. 1899 A, p. 73.
Trouessart, E. L. 1898 A, p. 841.
Wilckens, M. 1885 C, p. 422.
Wortman, J. L. 1898 A, p. 124, fig. 20.
Miocene (Loup Fork); Nebraska, New Mexico, Texas.

Procamelus heterodontus Cope.

Cope, E. D. 1873 R, p. 420.
1874 B, p. 530.
1874 P, p. 20.
1876 G, p. 145. (Protolabis.)
1877 K, p. 325.
1879 B, p. 68. (Protolabis.)
1886 C, p. 620, fig. 11.
Hay, O. P. 1899 A, p. 593.
Matthew, W. D. 1899 A, p. 74. (Protolabis.)
Roger, O. 1896 A, p. 216.
Trouessart, E. L. 1898 A, p. 841. (Protolabis.)
Wilckens, M. 1885 C, p. 422.
Wortman, J. L. 1898 A, pp. 120, 123. (Syn. of P. robustus.)
Miocene (Loup. Fork); Colorado.

Procamelus lacustris Douglass.

Douglass, E. 1900 A, p. 18, pl. i, fig. 2.
Miocene; Montana.

Procamelus leptognathus Cope.

Cope, E. D. 1893 A, p. 37.
Matthew, W. D. 1899 A, p. 73.
Roger, O. 1896 A, p. 216.
Trouessart, E. L. 1898 A, p. 842.
Miocene (Loup Fork); Texas.

Procamelus madisonius Douglass.

Douglass, E. 1900 A, p. 15, pl. ii.
Miocene; Montana.

Procamelus major (Leidy).

Leidy, J. 1886 B, p. 11. (Auchenia.)
Cope, E. D. 1892 AA. (Pliauchenia.)
Leidy, J. 1887 A. (Auchenia.)
1889 A. (Auchenia.)
1892 A. (Auchenia.)
Leidy and Lucas 1896 A, pp. viii, 53; pl. xv, fig. 9; pl. xvii. figs. 1-16; pl. xviii, figs. 1-4.
Roger, O. 1896 A, p. 219. (Auchenia.)
Trouessart, E. L. 1898 A, p. 845. (Lama.)
Pliocene; Florida.

Procamelus minimus (Leidy).

Leidy, J. 1886 B, p. 11. (Auchenia.)
Cope, E. D. 1892 AA. (Auchenia.)
Leidy, J. 1889 D, p. 17, pl. iii, fig. 5. (Auchenia.)
1892 A. (Auchenia.)
Leidy and Lucas 1896 A, pp. viii, 53, pl. xvi, figs. 1-4.
Roger, O. 1896 A, p. 218. (Auchenia.)
Trouessart, E. L. 1898 A, p. 845. (Lama.)
Pliocene; Florida.

Procamelus minor (Leidy).

Leidy, J. 1886 B, p. 12. (Auchenia.)
Cope, E. D. 1892 AA. (Pliauchenia media.)
Leidy, J. 1889 A. (Auchenia.)
1892 A. (Auchenia.)
Leidy and Lucas 1896 A, pp. viii, 53, pl. xv, fig. 10; pl. xvii, figs. 17, 18; pl. xviii, figs. 5, 6. (P. medius, error for P. minor.)
Roger, O. 1896 A, p. 218. (Auchenia.)
Trouessart, E. L. 1898 A, p. 846. (Lama.)
Pliocene; Florida.

Procamelus montanus (Douglass).

Douglass, E. 1900 A, p. 13, pl. iii. (Protolabis.)
Miocene; Montana.

Procamelus occidentalis Leidy.

Leidy, J. 1858 E, p. 23.
Baur, G. 1885 I.
Cope, E. D. 1874 B, p. 531.
1874 P, p. 22.
1875 F, p. 70, pl. ii.
1876 G, pp. 144, 146.
1877 K, p. 329,[1] pl. liii, fig. 2; pl. lxxvi; pl. lxxvii, figs. 1-3; pl. lxxviii, figs. 1-9; pl. lxxix.
1877 M.
Cope, E. D. 1881 J, p. 547, fig. 9.
1886 C, p. 621, figs. 2, 12, 14.
1887 S, p. 223, fig. 14.
1889 G, p. 114, fig. 10.
1893 A, p. 37.
Hayden, F. V. 1858 B, p. 157.
Leidy, J. 1869 A, pp. 151, 382, pl. ix, fig. 5; pl. xv, figs. 5-7 (P. occidentalis); pp. 158, 382, pl. xiv, figs. 16, 17 (Homocamelus caninus).
1871 C, p. 350. (P. occidentalis, Homocamelus caninus.)
1873 A, p. 312. (Protocamelus.)
1873 B, pp. 258, 317, pl. xx.
1873 C, p. 15. (Protocamelus.)
Matthew, W. D. 1899 A, p. 73.
Osborn, Scott, and Speir 1878 A, pl. x, fig. 5.
Owen, R. 1870 C, p. 74.
Roger, O. 1896 A, p. 216 (P. occidentalis); p. 217 (Homocamelus caninus).
Scott, W. B. 1891 A, pp. 51, 57, pl. i, figs. 4, 5; pl; iii, fig. 52.
Trouessart, E. L. 1898 A, p. 841 (P. occidentalis). p. 842 (Homocamelus caninus).
Wilckens, M. 1885 C, p. 422 (P. occidentalis); p. 424 (Homocamelus caninus).
Woodward, A. S. 1898 B, p. 359, fig. 205.
Wortman, J. L. 1898 A, pp. 116, 123, 124, pl. xi, fig. G.
Zittel, K. A. 1893 B, p. 363, fig. 279.
Miocene (Loup Fork); South Dakota, Nebraska, New Mexico, Texas.

Procamelus robustus Leidy.

Leidy, J. 1858 F, p. 89.
Cope, E. D. 1881 C, p. 175. (Protolabis prehensilis.)
1893 A, p. 37.
Hay, O. P. 1899 A, p. 593.
Hayden, F. V. 1858 B, p. 157.
King, C. 1878 A, p. 430.
Leidy, J. 1869 A, pp. 148, 381, pl. xv, figs. 1-4.
1871 C, p. 350.
1873 B, pp. 258, 317.
Matthew, W. D. 1899 A, p. 73.
Roger, O. 1896 A, p. 216. (Protolabis robustus, P. prehensilis.)
Trouessart, E. L. 1898 A, p. 841.
Wilckens, M. 1885 C, p. 423.
Wortman, J. L. 1898 A, pp. 120, 123.
Miocene (Loup Fork); Nebraska, Kansas, Texas, New Mexico.

Procamelus virginiensis Leidy.

Leidy, J. 1873 C, p. 15. (Protocamelus.)
1873 A, p. 311. (Protocamelus.)
1873 B, pp. 259, 317, pl. xxvii, figs. 26-29.
Roger, O. 1896 A, p. 216.
Trouessart, E. L. 1898 A, p. 842.
Wilckens, M. 1885 C, p. 422.
Miocene; Virginia.

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[1] This description and the accompanying figures are referred later by Professor Cope to *P. gracilis*. Dr. Wortman (1898 A, p. 121) appears to regard the New Mexican specimens as *P. occidentalis*.

CAMELOPS Leidy. Type *C. kansanus* Leidy.

Leidy, J. 1854 F, p. 172.
Cope, E. D. 1884 G, p. 16. (Holomeniscus, type *Auchenia hesterna*.)
1886 C, p. 621. (Holomeniscus.)
1887 B, p. 392. (Holomeniscus.)
Cragin, F. W. 1892 A, p. 257. (Holomeniscus.)
Leidy, J. 1858 E, p. 24. (Megalomeryx, type *M. niobrarensis*.)
1871 C, p. 349 (Camelops); p. 351 (Megalomeryx).
Scott, W. B. 1891 A, p. 52. (Holomeniscus.)
1892 A, p. 436. (Holomeniscus.)
Steinmann and Döderlein 1890 A, p. 801. (Holomeniscus.)
Whitney, J. D. 1879 A, p. 250. (Megalomeryx.)
Wilckens, M. 1885 C, p. 425. (Megalomeryx.)
Wortman, J. L. 1898 A, p. 128.
Zittel, K. A. 1893 B, p. 364 (Camelops); p. 365 (Holomeniscus).

Camelops californicus (Leidy).

Leidy, J. 1870 T, p. 126. (Auchenia.)
Bowers, S. 1889 A, p. 391. (Holomeniscus.)
Cope, E. D. 1884 G, p. 18. (Auchenia.)
Cragin, F. W. 1892 A, p. 257. (Auchenia.)
Leidy, J. 1871 C, p. 349. (Auchenia.)
1873 B, p. 255. (Auchenia.)
Roger, O. 1896 A, p. 217. (Holomeniscus.)
Trouessart, E. L. 1898 A, p. 843. (Subsp. of Holomeniscus hesternus.)
Whitney, J. D. 1879 A, p. 248. (Auchenia.)
Wilckens, M. 1885 C, p. 431. (Auchenia.)
Zittel, K. A. 1893 B, p. 365. (Holomeniscus.)
Pleistocene; California.

Camelops hesternus (Leidy).

Leidy, J. 1873 F. (Auchenia.)
Cope, E. D. 1884 G, p. 17. (Holomeniscus.)
1889 F. (Holomeniscus.)
1889 S, pp. 978, 980. (Holomeniscus.)
1892 E, p. 251. (Holomeniscus.)
Cragin, F. W. 1892 A, p. 257. (Auchenia.)
Dana, J. D. 1879 A, p. 233. (Auchenia.)
Leidy, J. 1873 B, pp. 255, 317, pl. xxxvii, figs. 1-3. (Auchenia.)
Roger, O. 1896 A, p. 217. (Holomeniscus.)
Trouessart, E. L. 1898 A, p. 843. (Holomeniscus.)
Whitney, J. D. 1879 A, p. 250. (Auchenia.)
Wilckens, M. 1885 C, p. 431. (Auchenia.)
Wortman, J. L. 1898 A, p. 130. (Syn. of Camelops kansanus.)
Yates, L. G. 1874 B, p. 18. (Auchenia.)
Pleistocene; California, Oregon, Mexico.

From this species the Texan and New Mexican specimens are excluded. Not improbably the species is identical with *C. kansanus*.

Camelops kansanus Leidy.

Leidy, J. 1854 F, p. 172.
Cope, E. D. 1893 A, p. 72 (Auchenia huerfanensis); p. 84, pl. xxiii, fig. 4 (Holomeniscus sulcatus).
Cragin, F. W. 1892 A, p. 258. (Auchenia huerfanensis.)
1896 A, p. 53. (A. huerfanensis.)
Hayden, F. V. 1858 B, p. 157. (Megalomeryx niobrarensis.)
King, C. 1878 A, p. 430. (Megalomeryx niobrarensis.)
Leidy, J. 1856 T, p. 166, pl. xvii, figs. 8-10.
1858 E, p. 24. (Megalomeryx niobrarensis.)
1869 A, p. 382 (C. kansanus); pp. 161, 382, pl. xiv, figs. 12-14 (Megalomeryx niobrarensis).
1871 C, p. 349 (C. kansanus); p. 351 (Megalomeryx niobrarensis.)
1873 B, p. 260, pl. xxvii, figs. 24, 25 (Megalomeryx niobrarensis?); p. 317 (Procamelus? niobrarensis).
Owen, R. 1870 C, p. 75.
Roger, O. 1896 A, p. 216 (Procamelus niobrarensis); p. 217 (Camelops kansanus, Holomeniscus sulcatus); p. 218 (Auchenia huerfanensis).
Trouessart, E. L. 1898 A, p. 842 (C. kansanus); p. 845 (Lama huerfanensis).
Wilckens, M. 1885 C, p. 425.
Williston, S. W. 1897 I, p. 303 (C. kansanus); p. 304 (Auchenia huerfanensis).
1898 I, p. 92. (Auchenia kansanus, A. huerfanensis.)
Wortman, J. L. 1898 A, p. 130.
Pleistocene; Kansas.

Camelops macrocephalus (Cope).

Cope, E. D. 1893 A, p. 85, pl. xxiii, fig. 5. (Holomeniscus.)
Roger, O. 1896 A, p. 217. (Holomeniscus.)
Trouessart, E. L. 1898 A, p. 843. (Holomeniscus.)
Pliocene (Equus beds); Texas.

Camelops vitakerianus (Cope).

Cope, E. D. 1878 H, p. 380. (Auchenia.)
1884 G, p. 17. (Holomeniscus.)
1889 F. (Holomeniscus.)
1889 S, pp. 978, 980. (Holomeniscus.)
1893 A, p. 86. (Holomeniscus.)
Roger, O. 1896 A, p. 217. (Holomeniscus.)
Trouessart, E. L. 1898 A, p. 843. (Holomeniscus.)
Wortman, J. L. 1898 A, p. 132.
Pliocene; Oregon.

PLIAUCHENIA Cope. Type *P. humphreysiana* Cope.

Cope, E. D. 1875 P, p. 258.
1875 F, pp. 69, 75.
1875 Q, p. 262.
1876 G.
1877 K, p. 340.
Cope, E. D. 1886 C, p. 612.
1887 B, p. 392.
1893 A, p. 70.
Flower and Lydekker 1891 A, p. 304.
Nicholson and Lydekker 1889 A, p. 1331.

Schlosser, M. 1886 B, p. 49.
Scott, W. B. 1891 A, p. 51.
Wilckens, M. 1885 C, p. 428.
Wortman, J. L. 1898 A, p. 126.
Zittel, K. A. 1893 B, p. 364.

Pliauchenia humphreysiana Cope.

Cope, E. D. 1875 P, p. 258.
1875 F, p. 69.
1877 K, p. 344, pl. lxxvii, fig. 4.
1886 C, p. 621.
1892 AA.
Matthew, W. D. 1899 A, p. 74.
Roger, O. 1896 A, p. 217.
Trouessart, E. L. 1898 A, p. 842. (P. humphresiana.)
Wilckens, M. 1885 C, p. 430.
Wortman, J. L. 1898 A, p. 127. (P. humphresiana.)
Zittel, K. A. 1893 B, p. 364. (P. humphriesiana.)
Miocene (Loup Fork); New Mexico, Kansas.

Pliauchenia minima Wort.

Wortman, J. L. 1898 A, p. 127.
Matthew, W. D. 1899 A, p. 74.
Miocene (Loup Fork); Kansas.

Pliauchenia spatula Cope.

Cope, E. D. 1893 A, p. 70, pl. xxi, figs. 1, 2.
Matthew, W. D. 1899 A, p. 75.
Roger, O. 1896 A, p. 217.
Trouessart, E. L. 1898 A, p. 842.
Wortman, J. L. 1898 A, p. 127.
Pliocene (Blanco); Texas.

Pliauchenia vulcanorum Cope.

Cope, E. D. 1875 P, p. 259.
1875 F, p. 70.
1877 K, p. 345, pl. lxxvii, fig. 5.
1892 AA.
Matthew, W. D. 1899 A, p. 74.
Roger, O. 1896 A, p. 217.
Trouessart, E. L. 1898 A, p. 842.
Wilckens, M. 1885 C, p. 430.
Wortman, J. L. 1898 A, p. 127.
Miocene (Loup Fork); New Mexico.

As Dr. Wortman has pointed out, the generic position of this species is doubtful.

CAMELINÆ.

Cope, E. D. 1887 B, pp. 379, 394. (Eschatiidæ.)
1888 X, p. 1080. (Eschatiidæ.)
Roger, O. 1896 A, p. 217.
Trouessart, E. L. 1898 A, p. 843.
Zittel, K. A. 1893 B, p. 364.

Eschatius Cope. Type *E. conidens* Cope.

Cope, E. D. 1884 G, pp. 16, 18.
1886 C, p. 622.
1891 L, p. 1118.
Nicholson and Lydekker 1889 A, p. 1335.
Scott, W. B. 1891 A, p. 52.
1892 A, p. 436.
Steinmann and Döderlein 1890 A, p. 801.
Zittel, K. A. 1893 B, p. 365.

Eschatius conidens Cope.

Cope, E. D. 1884 G, p. 19.
1889 F.
1889 S, pp. 978, 980.
Roger, O. 1896 A, p. 217.
Trouessart, E. L. 1898 A, p. 843.
Wortman, J. L. 1898 A, p. 134.
Pliocene; Oregon, Mexico.

Eschatius longirostris Cope.

Cope, E. D. 1884 G, p. 20.
1889 F.
1889 S, pp. 978, 980.
Roger, O. 1896 A, p. 217.
Trouessart, E. L. 1898 A, p. 843.
Wortman, J. L. 1898 A. p. 135.
Pliocene; Oregon.

Camelus Linn. Type *C. dromedarius* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 65.
Baur, G. 1885 I, p. 196.
Blainville, H., M. D. 1864 A, iv, CC, p. 61, pls. i-v.
Cope, E. D. 1886 C, p. 612.
Flower and Lydekker 1891 A, p. 296.
Lydekker, R. 1885 C, p. 139.
Nicholson and Lydekker 1889 A, p., 1335.
Owen, R. 1866 B, p. 470, figs. 307, 318.
1868 A, p. 349, fig. 278.
Paulli, S. 1900 A, p. 203.
Roger, O. 1896 A, p. 219.
Scott, W. B. 1891 A.
Trouessart, E. L. 1898 A, p. 846.
Woodward, A. S. 1898 B, p. 360.
Zittel, K. A. 1893 B, p. 364.

Camelus americanus Wort.

Wortman, J. L. 1898 A, p. 138, fig. 2.
Trouessart, E. L. 1899 A, p. 1349.
Pleistocene; Nebraska.

Teleopternus Cope. Type *T. orientalis* Cope.

Cope, E. D. 1899 A. p. 263.

Professor Cope expressed himself as being unable to determine whether this genus was a camelid or a cervid.

Teleopternus orientalis Cope.

Cope, E. D. 1899 A, p. 264, pl. xxi, figs. 4, 4a.
Pleistocene; Pennsylvania.

Superfamily TRAGULOIDEA.

Citations to the literature of this superfamily and of the family Tragulidæ are here presented because by some authors the Leptomerycinæ, here placed in the Cameloidea, have been assigned to the Tragulidæ and may yet be retained there. Unless otherwise indicated, the following authors use the name Tragulina in referring to this group.

Cope, E. D. 1885 B.
Flower, W. H. 1874 A.
Flower, W. H. 1885 A.
Flower and Lydekker 1891 A, p. 305.
Gill, T. 1872 B, pp. 9, 73, 80. (Traguloidea.)
Osborn and Wortman 1892 B, p. 370.
Rütimeyer, L. 1867 B.
    1877 A, p. 21.
    1878 A, p. 21.
    1883 A, p. 15.
    1884 A, p. 403.
Scott, W. B. 1892 A, p. 436.

TRAGULIDÆ.

Boas, J. E. V. 1890 A.
Branco W. 1897 A, p. 25.
Cope, E. D. 1884 H, p. 27.
    1887 B, pp. 379, 388.
    1888 X, p. 1081.
    1889 G, p. 120.
Edwards, A. M. 1864 A.
Flower, W. H. 1873 A.
Flower and Lydekker 1889 A, p. 305.
Gill, T. 1872 B, pp. 9, 73, 80.
Gray, J. E. 1869 C.
Huxley, T. H. 1870 A, p. 439.
    1872 A, p. 326.
Kowalevsky, W. 1873 A, p. 186.
Lydekker, R. 1885 C, p. 150.
    1896 B, p. 164.
Nicholson and Lydekker 1889 A, p. 1333.
Osborn and Wortman 1892 B, p. 370.
Roger, O. 1896 A, p. 224.
Schlosser, M. 1886 A, p. 254.
    1886 B, p. 72.
Scott, W. B. 1890 B, p. 388.
Steinmann and Döderlein 1890 A, p. 802.
Trouessart, E. L. 1898 A, p. 857.
Woodward, A. S. 1898 B, p. 360.
Zittel, K. A. 1893 B, p. 381.

Superfamily BOÖIDEA.

Boas, J. E. V. 1890 A. (Ruminantia.)
Brandt, E. 1888 A. (Ruminantia.)
Cope, E. D. 1884 H, p. 27. (Selenodonta.)
    1884 DD. (Selenodonta.)
    1885 B, p. 483. (Selenodonta.)
    1887 B, p. 304 (Pecora); p. 378 (Selenodonta).
    1898 B, p. 130. (Boöidea.)
Cuvier, G. 1834 A, vi. (Ruminantia.)
Flower, W. H. 1873 A. (Ruminantia.)
    1874 A. (Pecora.)
    1883 D, p. 430. (Pecora.)
    1885 A. (Pecora.)
Flower and Lydekker 1891 A, p. 307. (Pecora.)
Gaudry, A. 1878 B, p. 77. ("Les Ruminants.")
Gill, T. 1872 B, pp. 9, 76.
Grüber, W. 1859 A. (Ruminantia.)
Huxley, T. H. 1872 A, p. 322. (Ruminantia.)
Kowalevsky, W. 1873 A, p. 171. (Selenodonta.)
    1874 A. (Ruminantia.)
Lydekker, R. 1883 A. (Ruminantia.)
Marsh, O. C. 1877 E. (Selenodonta.)
Mayo, F. 1888 A. (Ruminantia.)
Mettam, A. E. 1895 A. (Ruminantia.)
Osborn and Wortman 1892 B, p. 370. (Pecora.)
Owen, R. 1845 B, p. 527. (Ruminantia.)
    1857 A. (Ruminantia.)
Parker, W. K. 1885 A, p. 201.
Roger, O. 1889 A. (Ruminantia.)
Rütimeyer, L. 1862 A, p. 603. (Ruminantia.)
    1865 A.
    1867 B.
    1868 A.
    1884 A, p. 425. (Selenodonta.)
Schlosser, M. 1889 A.
Schmidt, O. 1886 A, p. 150 (Ruminantia); p. 173 (Cavicornia).
Scott, W. B. 1899 A, p. 118. (Pecora.)
Steinmann and Döderlein 1890 A, p. 797.
Turner, H. N. 1848 A.
Zittel, K. A. 1893 B, p. 413. (Cavicornia.)

CERVIDÆ.

Ameghino, F. 1889 A, p. 599.
Baird, S. F. 1857 A, p. 629.
Baur, G. 1884 F. p. 599.
Branco, W. 1897 A, p. 25. (Cervicornia.)
Brandt, E. 1888 A.
Brooke, V. 1878 A, p. 883.
Cope, E. D. 1887 B, pp. 379, 394, 398.
    1888 X, p. 1081.
    1889 G, p. 124.
Cope and Wortman 1884 A, p. 22.
Coues, E. 1878 B.
Cuvier, G. 1834 A, vi, p. 43, plates.
Flower, W. H. 1873 A.
Flower, W. H. 1874 A.
    1883 D, p. 431.
    1885 A.
Flower and Lydekker 1891 A, p. 31.
Gill, T. 1872 B, pp. 9, 73.
Leidy, J. 1871 C, p. 351.
Leuthardt, F. 1891 A, p. 126.
Lydekker, R. 1885 C, p. 73.
Lydekker, R. 1896 B, p. 164.
    1898 A.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1336.
Nitsche, H. 1899 A.

Owen, R. 1866 B.
Pohlig, H. 1892 A.
Roger, O. 1887 A.
Rütimeyer, L. 1867 B. (Cervicornia.)
 1877 A.
 1878 A, p. 25.
 1881 A.
 1882 A.
Rütimeyer, L. 1883 A, p. 20.
Schmidt, O. 1886 A, p. 158.
Steinmann and Döderlein 1890 A, p. 804.
Trouessart, E. L. 1898 A, p. 864.
Weyhe, ——. 1875 A, p. 118.
Woodward, A. S. 1898 B, p. 363.
Zittel, K. A. 1893 B, p. 390. (Cervicornia.)

CERVULINÆ.

Brooke, V. 1874 A.
Cope, E. D. 1887 B, pp. 394, 395. (Cosorycinæ, Cosorycidæ.)
Flower, W. H. 1874 A.
Roger, O. 1896 A, p. 227.
Rütimeyer, L. 1881 A, p. 23.
Rütimeyer, L. 1882 A, p. 16. (Cervulina.)
 1884 A, p. 445.
Steinmann and Döderlein 1890 A, p. 805.
Trouessart, E. L. 1898 A, p. 865.
Zittel, K. A. 1893 B. 395.

PALÆOMERYX Meyer. Types *P. bojani* and *P. kaupii*.

Meyer, H. 1834 A, p. 92.
Blainville, H. M. D. 1864 A, iv, BB, p. 135.
Depéret, C. 1887 A, p. 210.
Douglass, E. 1900 A, p. 20.
Flower and Lydekker, 1891 A, p. 330.
Hofmann, A., 1888, Jahrb. k. k, geol. Reichsanst., xxxviii, p. 551.
Lydekker, R., 1883, Mem. Geol. Surv. India, ii, pp. 173, 174. (Propalæomeryx.)
Nicholson and Lydekker 1889 A, p. 1338.
Pictet, F. J. 1853 A. p. 350.
Rütimeyer, L. 1883 A. p. 79.
Schlosser, M. 1886 C, p. 294.
Steinmann and Döderlein 1890 A, p. 805.
Trouessart, E. L. 1898 A, p. 867.
Zittel, K. A. 1893 B, p. 397.

Palæomeryx americanus Douglass.

Douglass, E. 1900 A, p. 20, pl. iv, figs. 2, 3.
 Miocene (Loup Fork); Montana.

Palæomeryx madisonius Douglass.

Douglass, E. 1900 A, p. 23.
 Miocene (Loup Fork); Montana.

BLASTOMERYX Cope. Type *Merycodus gemmifer* Cope.

Cope, E. D. 1877 K, p. 350.
 1875 F, p. 68. (Dicrocerus, not of Lartet.)
 1875 O, p. 257. (Dicrocerus.)
 1878 C, p. 222.
 1884 H, p. 27.
 1885 B, p. 488.
 1887 B, p. 396.
 1889 C, p. 206.
 1889 G, p. 125.
Nicholson and Lydekker 1889 A, p. 1342.
Scott, W. B. 1891 D, p. 90.
 1895 C, p. 167.
Scott and Osborn 1890 B, p. 76, figs. 7–9.
Zittel, K. A. 1893 B, p. 399.
Cope, E. D. 1886 H.
 1889 G, p. 123, figs. 16, 19.
Matthew, W. D. 1899 A, p. 74.
Roger, O. 1896 A, p. 230.
Scott, W. B. 1891 D, p. 91.
 1893 B, p. 659.
 1895 C, p. 168.
Trouessart, E. L. 1898 A, p. 870.
 Miocene (Loup Fork); Montana, Oregon.

Blastomeryx antilopinus Scott.

Scott, W. B. 1893 B, p. 662.
Matthew, W. D. 1899 A, p. 74.
Roger, O. 1896 A, p. 230.
Scott, W. B. 1895 C, p. 168, pl. vi, figs. 48–51.
Trouessart, E. L. 1898 A, p. 870.
 Miocene (Loup Fork); Montana.

Blastomeryx borealis Cope.

Cope, E. D. 1878 C, p. 222.
 1878 H, p. 382.
 1878 L, p. 58.
 1884 DD, p. 1035.
 1886 B, p. 359.

Blastomeryx gemmifer Cope.

Cope, E. D. 1874 B, p. 531. (Merycodus.)
 1874 P, p. 22. (Merycodus.)
 1875 F, p. 68. (Dicrocerus.)
 1875 O, p. 257. (Dicrocerus.)
 1877 K, pp. 350, 360, pl. lxxxii, fig. 13. [Dicrocerus (Blastomeryx).]
 1884 DD, p. 1035. (Cosoryx.)
 1885 B, p. 488.
 1893 A, p. 39.
Matthew, W. D. 1899 A, p. 74.
Roger, O. 1896 A, p. 230.
Scott and Osborn 1890 B, p. 76.
Trouessart, E. L. 1898 A, p. 870.
Wilckens, M. 1885 C, p. 425. (Cosoryx.)
Zittel, K. A. 1893 B, p. 399, fig. 330.
 Miocene (Loup Fork); Colorado, Texas?, New Mexico, Nebraska.

MERYCODUS Leidy. Type *M. necatus* Leidy.

Leidy, J. 1854 C, p. 90.
Cope, E. D. 1875 F, p. 69. (Dicrocerus, not of Lartet.)
1875 O. (Dicrocerus.)
1877 K, p. 346. (Dicrocerus.)
1879 A, p. 46. (Procervulus, Merycodus, and Cosoryx, "nomina nuda.")
1880 B, p. 46. (Syn. of Procervulus Gaudry.)
1884 H, p. 27. (Cosoryx.)
1884 Z, p. 718. (Cosoryx.)
1884 DD. (Cosoryx.)
1885 B, p. 488. (Cosoryx.)
1887 B, p. 396. (Cosoryx.)
1889 C. (Cosoryx.)
1889 G, p. 125. (Cosoryx.)
Hay, O. P. 1899 A, p. 594.
Hensel, R. 1859 A. (Dicrocerus Lartet, not of Cope.)
Leidy, J. 1858 E, p. 23. (Merycodus.)
1869 A, pp. 162, 382 (Merycodus); pp. 173, 383 (Cosoryx, type *C. furcatus*.
1871 C, p. 350 (Merycodus); p. 351 (Cosoryx).
1873 B, p. 318. (Merycodus.)
Marsh, O. C. 1877 E. (Cosoryx.)
Nicholson and Lydekker 1889 A, p. 1345. (Cosoryx.)
Rütimeyer, L. 1878 A, p. 90. (Cosoryx.)
Trouessart, E. L. 1898 A, p. 870. (Cosoryx.)
Wilckens, M. 1885 C, p. 425.
Zittel, K. A. 1893 B, p. 399. (Cosoryx.)

Merycodus agilis (Douglass).

Douglass, E. 1900 A, p. 23, pl. iv, fig. 1. (Cosoryx.)
Miocene; Montana.

Merycodus furcatus (Leidy).

Leidy, J. 1869 A, pp. 173, 383, pl. xxviii, fig. 8. (Cosoryx.)
Cope, E. D. 1874 I, p. 148. (Cosoryx.)
1875 O, p. 257. (Dicrocerus.)
1877 K, p. 350, pls. lxxx, lxxxi, fig. 1; pl. lxxxii, fig. 1. (Dicrocerus.)
1880 E, p. 141. (Procervulus.)
1881 J, p. 547, fig. 10. (Cosoryx.)
1887 S, p. 271, fig. 5.
1889 C. (Cosoryx.)
1889 G, p. 114, fig. 11. (Cosoryx.)
Dawkins, W. B. 1870 A, p. 232. (Cosoryx.)
King, C. 1878 A, p. 430. (Cosoryx.)
Leidy, J. 1871 C, p. 352. (Cosoryx.)
Matthew, W. D. 1899 A, p. 74. (Cosoryx.)
Roger, O. 1896 A, p. 230. (Cosoryx.)
Scott and Osborn 1890 B, p. 82, pl. i. (Cosoryx.)
Trouessart, E. L. 1898 A, p. 870. (Cosoryx.)
Zittel, K. A. 1893 B, p. 399, fig. 331. (Cosoryx.)
Miocene (Loup Fork); Nebraska, New Mexico.

Merycodus necatus Leidy.

Leidy, J. 1854 C, p. 90. (Merycodus.)
Cope, E. D. 1875 F, p. 69. (Dicrocerus.)
1875 O, p. 257. (Dicrocerus.)
1877 K, pp. 350, 353, pl. lxxxi, figs. 2–6; pl. lxxxii, figs. 2, 3. (Dicrocerus.)
1880 E, p. 141. (Procervulus.)
1889 G, p. 128, fig. 18. (Cosoryx.)
Hayden, F. V. 1858 B, p. 157. (M. necatus, Cervus warreni.)
King, C. 1878 A, p. 430. (Cervus warreni, M. necatus.)
Leidy, J. 1854 E, p. 157.
1858 E, p. 23. (M. necatus, Cervus warreni.)
1869 A, pp. 162, 382, pl. xiv, figs. 9, 10 (M. necatus); pp. 172, 379, pl. xxvii, fig. 12 (Cervus warreni).
1871 C, p. 350 (M. necatus); p. 351 (Cervus warreni).
1873 B, p. 318.
Matthew, W. D. 1899 A, p. 74. (Cosoryx.)
Roger, O. 1896 A, p. 230.
Trouessart, E. L. 1898 A, p. 870.
Wilckens, M. 1885 C, p. 425.
Pliocene; South Dakota, Wyoming Nebraska, New Mexico.

Merycodus ramosus (Cope).

Cope, E. D. 1874 I, p. 148, in part. (Cosoryx.)
1874 O, p. 16. (Cosoryx.)
1875 F, p. 69. (Dicrocerus.)
1875 O, p. 257. (Dicrocerus.)
1877 K, pp. 350, 356. (Syn., in part, of Dicrocerus furcatus.)
1880 E, p. 141. (Procervulus.)
1889 C, p. 205. Cosoryx.)
1889 G, p. 128, fig. 18. (Cosoryx.)
Matthew, W. D. 1899 A, p. 74. (Syn. of Cosoryx furcatus.)
Trouessart, E. L. 1898 A, p. 870. (Syn. of Cosoryx furcatus.)
Pliocene; New Mexico.

Merycodus tehuanus (Cope).

Cope, E. D. 1877 K, pp. 350, 359, pl, lxxxii, figs. 10–?12. (Dicrocerus.)
Matthew, W. D. 1899 A, p. 74. (Cosoryx.)
Roger, O. 1896 A, p. 230. (Cosoryx.)
Trouessart, E. L. 1898 A, p. 870. (Syn. of Cosoryx trilateralis.)
Pliocene; New Mexico.
A doubtful species.

Merycodus teres (Cope).

Cope, E. D. 1874 I, p. 148. (Cosoryx.)
1874 O, p. 16. (Cosoryx.)
1875 F, p. 69. (Dicrocerus.)
1875 O, p. 257. (Dicrocerus.)
1877 K, pp. 347, 356, pl. lxxxi, fig. 7; pl. lxxxii, fig. 6. (Dicrocerus.)
Matthew, W. D. 1899 A, p. 74. (Cosoryx.)
Roger, O. 1896 A, p. 230. (Cosoryx.)
Scott and Osborn 1890 B, p. 83. (Cosoryx.)
Trouessart, E. L. 1898 A, p. 870. (Cosoryx.)
Miocene (Loup Fork); New Mexico.

Merycodus trilateralis (Cope).

Cope, E. D. 1877 K, p. 357, pl. lxxxi, fig. 8; pl. lxxxii, figs. 7–9. (Dicrocerus.)
Matthew, W. D. 1899 A, p. 74. (Cosoryx.)
Roger, O. 1896 A, p. 230. (Cosoryx.)
Scott and Osborn 1890 B, p. 83. (Cosoryx.)
Trouessart, E. L. 1898 A, p. 870. (Cosoryx.)
Miocene (Loup Fork); New Mexico.

CERVINÆ.

Baird, S. F. 1857 A, p. 630.
Flower and Lydekker 1891 A, p. 316.
Gill, T. 1872 B, p. 9.
Lydekker, R. 1898 A, p. 32.
Nicholson and Lydekker 1889 A, p. 1342.
Roger, O. 1887 A. (Cervina.)
Roger, O. 1896 A, p. 230.
Rütimeyer, L. 1882 A, p. 22. (Cervina.)
1883 A, p. 20. (Cervina.)
1884 A, p. 408. (Cervina.)
Steinmann and Döderlein 1890 A, p. 806.
Zittel, K. A. 1893 B, p. 400.

DAMA Zimm. Type *D. virginiana* Zimm.

Zimmermann, E., 1777, Zool. Geog., p. 532.
Baird, S. F. 1857 A, p. 637. (Cervus, in part.)
Cope, E. D. 1887 B, p. 398. (Cariacus.)
1889 G, p. 132. (Cariacus.)
Flower and Lydekker 1891 A, p. 329. (Cariacus.)
Gray, J. E. 1850. (Cariacus.)
Hensel, R. 1859 A, p. 257. (Cariacus.)
Lydekker, R. 1885 C, p. 82. (Cervus.)
1898 A, p. 243. (Mazama.)
Nicholson and Lydekker, 1889 A, p. 1342. (Cariacus.)
Rafinesque, C. 1832–33, Atlantic Jour., p. 109, figure. (Odocoileus.)
Roger, O. 1887 A. (Cariacus.)
1896 A, p. 230. (Cervus.)
Rütimeyer, L. 1881 A, p. 47. (Cariacus.)
1882 A, p. 26. (Cariacus.)
1884 A, p. 410. (Cariacus.)
Zittel, K. A. 1893 B, p. 401. (Cariacus.)

Dama dolichopsis (Cope).

Cope, E. D. 1878 GG, p. 189. (Cariacus.)
1878 H, p. 379. (Cariacus.)
Cope and Wortman 1884 A, p. 22, pl. ii. (Cariacus.)
Kindle, E. M. 1898 A, p. 485. (Cariacus.)
Pleistocene; Indiana.

Dama ensifer (Cope).

Cope, E. D. 1889 F, p. 163. (Cariacus.)
Roger, O. 1896 A, p. 232. (Cervus.)
Trouessart, E. L. 1898 A, p. (Cariacus.)
Pleistocene (Equus beds); Oregon.

Dama lævicornis (Cope).

Cope, E. D. 1896 F, p. 393. (Cariacus.)
1899 A, p. 265, pl. xxi, fig. 5. (Cariacus.)
Trouessart, E. L. 1898 A, p. 892. (Cariacus.)
Pleistocene; Pennsylvania.

Dama virginiana Zimm.

Zimmermann, E., 1777, Zool. Geog., p. 532.
Allen, J. A. 1876 A, p. 48. (Cervus.)
Baird, S. F. 1857 A, p. 643, text fig. 13. (Cervus.)
Cooper, W. 1831 A, p. 207. (Cervus.)
Cope, E. D. 1869 E, p. 176. (Cariacus.)
1869 N, p. 742. (Cariacus.)
1871 K, p. 176. (Cariacus.)
1899 A, p. 266. (Cariacus.)
Cuvier, G. 1834 A, vi, p. 63, pl. 166. (Cervus.)
Emmons, E. 1858 B, p. 200. (Cervus.)
Erxleben, C. P., 1777, Syst. Reg. Anim., Mamm., p. 312. (Cervus dama americanus; americanu not nomenclatorial.)
Flower and Lydekker, 1891 A, p. 326, fig. 132 (Cariacus.)
Hensel, R. 1859 A, p. 257, pl. xi, fig. 6. (Cariacus, Cervus.)
Kindle, E. M, 1898 A, p. 485. (Cariacus.)
Leidy, J. 1854 I, p. 200. (Cervus.)
1860 B, p. 109, pl. xx, figs. 1–4. (Cervus.)
1869 A, p. 376. (Cervus virg.)
1889 B, p. 96. ("Deer.")
1889 E, p. 22. (Cervus.)
1889 H, p. 6. (Cervus.)
1892 A. (Cervus.)
Lydekker, R. 1898 A, p. 249, pl. xx; text figs. 68, 69
Rafinesque, C. 1832–33, Atlantic Jour. p. 109, figure. (Odocoileus speleus.)
Roger, O. 1896 A, p. 232. (Cervus.)
Trouessart, E. L. 1898 A, p. 892. (Cariacus.)
Wailes, B. L. C. 1854 A, p. 286. (Cervus.)
Winchell, A. 1864 A, p. 223. ("Deer.")
Wyman, J. 1862 A, p. 421. (Cervus.)
Pleistocene and Recent. Fossil from South Carolina, New Jersey, Indiana, Kentucky, Virginia, Pennsylvania, Illinois, Mississippi.

Dama whitneyi (Allen.)

Allen, J. A. 1876 A, p. 49. (Cervus.)
Pleistocene; lead region of Illinois, Iowa, and Wisconsin.

CERVUS Linn. Type *C. elaphus* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 66.
By many of the following authors the generic name *Cervus* is employed in a more comprehensive sense than is here given it.
Baird, S. F. 1857 A, p. 637, in part.
Brooke, V. 1878 A.
Cope, E. D. 1887 B, p. 398.
Cuvier, G. 1834 A, vi, p. 43, plates.
Flower and Lydekker 1891 A, p. 319.
Leidy, J. 1871 C, p. 351.
Lydekker, R. 1885 C, p. 73.
1898 A, p. 61.
Nicholson and Lydekker 1889 A, p. 1338.
Nitsche, H. 1891 A.
Owen, R. 1866 B, p. 477.
Paulli, S. 1900 A, p. 210.
Pictet, F. J. 1853 A, p. 358.
Rütimeyer, L. 1884 A, p. 408.
Trouessart, E. L. 1898 A, p. 880.
Zittel, K. A. 1893 B, p. 401. (Elaphus.)

Cervus canadensis Erxl.

Erxleben, C. P., 1777, Syst. Reg. Anim., Mamm., p. 305. (Cervus elaphus canadensis.)
Allen, J. A. 1876 A, p. 48.
Baird, S. F. 1857 A, p. 638, text figs. 9–11.
Cooper, W. 1831 A, p. 207.
Cope, E. D. 1869 E, p. 178.
1869 N, p. 742.
Cuvier, G. 1834 A, vi, p. 49, pl. 164, figs. 13–22.
De Kay, J. E. 1842 C, p. 120, pl. xxix, fig. 2. (Elaphus americanus.)
Flower and Lydekker 1891 A, p. 322, fig. 129.
Hall, J. 1846 B, p. 391. (Elaphus.)
1887 A, p. 39. (Elaphus.)
Leidy, J. 1869 A, p. 377.
1889 H, p. 6.
Logan, W. E. 1863 A, p. 914.
Lydekker, R. 1898 A, p. 95, figs. 24, 25.
Putnam, F. W., 1900, 33d Report Peabody Mus. Amer. Archæl, Ethnol., Harvard Univ., p. 275. ("Elk.")
Roger, O. 1896 A, p. 235. (C. americanus fossilis.)
Scott, W. B. 1885 C, text fig. 1.
Trouessart, E. L. 1898 A, p. 883.
Tscherski, J. D. 1892 A, p. 222. (Cervus canadensis maral; in Russia.)
Winchell, A, 1864 A, p. 224. ("Elk.")
Zittel, K. A. 1893 B, p. 402.

Pleistocene and Recent. Fossil in New York, New Jersey, Kentucky, North Carolina, Florida, Ontario; also fossil in Europe and Siberia.

Cervus fortis Cope.

Cope, E. D. 1878 C, p. 223.
Roger, O. 1896 A, p. 235.
Trouessart, E. L. 1898 A, p. 882.

Pliocene (Loup Fork); Oregon.

CERVALCES Scott. Type *Cervus americanus* Harlan.

Scott, W. B. 1885 A, p. 420.
Cope, E. D. 1887 B, p. 398.
1889 G, p. 132.
Flower and Lydekker 1891 A, p. 327.
Lydekker, R. 1898 A, pp. 51, 60. (Alces.)
Nicholson and Lydekker 1889 A, p. 1341.
Scott, W. B. 1885 D, p. 4.
Zittel, K. A. 1893 B, p. 404.

Cervalces americanus (Harlan)

Harlan, R., 1825 A, p. 245. (Cervus.)
Cooper, W. 1831 A, p. 174. ("Cervus.")
Cooper, Smith, and De Kay 1831 A, p. 371. (Cervus alces?.)
Cope, E. D. 1889 G, p. 134.
De Kay, J. E. 1842 C, p. 120, in part. (Elaphus.)
Flower and Lydekker, 1891 A, p. 327.
Godman, J. D. 1828 A, ii, pl. opp. p. 197; iii, p. 242. ("Fossil elk.")
Harlan, R. 1834 B, p. 70. (Cervus.)
1835 B, p. 275. (Cervus.)
Leidy, J. 1869 A, p. 379. (Cervus.)
1884 B. (Cervus.)
Lydekker, R. 1898 A, p. 60, fig. 14. (Alces scotti.)
Osborn, H. F. 1898 N, p. 845. (Cervalces.)
1898 Q, p. 7, plate.
Roger, O. 1896 A, p. 236. (Cervus.)
Scott, W. B. 1885 A, p. 420, with 2 figures.
1885 C, p. 174, pl. ii, text figs. 2, 5, 7.
1885 D, p. 4, plate.
Trouessart, E. L. 1898 A, p. 883 (Cervus canadensis, in part); p. 886 (Cervalces americanus.)
Williston, S. W. 1897 I, p. 303. (Cervalces? americanus?.)
Wistar, C. 1818 A, p. 375, pl. x, figs. 4, 5. ("Cervus.")

Pleistocene; Kentucky, New Jersey.

ALCES Jardine. Type *Cervus alces* Linn.

Baird, S. F. 1857 A, p. 631. (Alce.)
Cope, E. D. 1887 B, p. 378.
Flower and Lydekker 1891 A, p. 326.
Lydekker, R. 1898 A, p. 49.
Roger, O. 1887 A.
Rütimeyer, L. 1881 A, p. 54.
1882 A, p. 28.
1884 A, p. 414.
Scott, W. B. 1885 C.
Zittel, K. A. 1893 B, p. 404.

Alces americanus Jardine.

Jardine, W., 1837, Nat. Library, iii, p. 125.
Baird, S. F. 1857 A, p. 631, text figs. 1, 2. (Alce.)
Cooper, W. 1831 A, p. 207. (Cervus alces.)
Flower and Lydekker 1891 A, p. 326, fig. 133. (Alces machlis, in part.)
Hensel, R. 1859 A, pl. xi, fig. 2. (C. alces of Europe.)
Leidy, J. 1869 A, p. 377. (Cervus alces.)
Lydekker, R. 1885 C, p. 78. (A. machlis, in part.)
1898 A, p. 52, pl. ii, text fig. 11. (A. machlis.)
Meyer, H. 1832 A, pl. xxxvii. (Cervus alces fossilis, not A. americanus.)
Nitsche, H. 1891 A. (C. alces, of Europe.)
Richardson, J. 1854 A, p. 20, pls. xx, xxi; pl. xxii, fig. 1; pl. xxiv (Cervus alces); p. 102 (Alces muswa).
Scott, W. B. 1885 C, p. 181; figs. 3, 4. (A. machlis.)
Trouessart, E. L. 1898 A, p. 887.
Williston, S. W. 1898 I, p. 92. (A. americanus?.)
Zittel, K. A. 1893 B, p. 404.

Recent in northern portions of North America: Pleistocene; Kentucky, Kansas?, Alaska.

Alces brevitrabalis Cope.

Cope, E. D. 1889 F, p. 162, February.
Trouessart, E. L. 1898 A, p. 887.

Pleistocene; Washington.

Alces semipalmatus Cope.

Cope, E. D. 1889 F, p. 162, February.
Roger, O. 1896 A, p. 237. (Cervus.)
Trouessart, E. L. 1898 A, p. 887.

Pleistocene; Washington.

RANGIFER H. Smith. Type *Cervus tarandus* Linn.

Smith, H., 1827, Griffith's Anim. Kingd., v, p. 304.
Baird, S. F. 1857 A, p. 633.
Brooke, V. 1878 A, p. 927.
Cope, E. D. 1887 B, p. 398.
Flower and Lydekker 1891 A, p. 324.
Lydekker, R. 1885 C, p. 79.
  1898 A, p. 33.
Paulli, S. 1900 A, p. 216.
Roger, O. 1887 A.
Rütimeyer, L. 1881 A, p. 51.
  1882 A, p. 27.
  1884 A, p. 413.
Zittel, K. A. 1893 B, p. 404.

Rangifer caribou (Gmelin).

Baird, S. F. 1857 A, p. 633, text figs. 3-6.
Cooper, W. 1831 A, p. 207. (Cervus tarandus.)
Cope, E. D. 1869 N, p. 740. (R. grœnlandicus.)
Dana, J. D. 1875 C, p. 354. (R. tarandus.)
Fisher, G. J. 1859 A, p. 194. ("Reindeer.")
Leidy, J. 1859 H. ("Reindeer.")
  1869 A, p. 377, pl. xxviii, fig. 9. (Cervus tarandus.)
  1879 A. (R. caribou, Cervus muscatinensis.)
  1880 A.
  1889 H, p. 5, pl. ii, fig. 22.
Lesley, J. P. 1889 A, p. 855, figure. ("Reindeer.")
Lydekker, R. 1898 A, p. 42. (R. tarandus caribou.)
Mercer, H. C. 1894 A, p. 98.
Shaler, N. S. 1871 B, p. 167. (Tarandus rangifer.)
Trouessart, E. L. 1898 A, p. 888.

Recent; Newfoundland to Alaska; not on Arctic coasts. Pleistocene; New England, New York, New Jersey, Pennsylvania, Kentucky, Iowa, Alaska.

Rangifer tarandus (Linn.).

Linnæus, C., 1758, Syst. Nat., 10, i, p. 67. (Cervus.)
Brandt, J. F. 1867 B.
Buckland, W. 1831 A, pp. 595, 597, 605, pl. iii, figs. 11-13. ("Reindeer.")
Hensel, R. 1859 A, pl. xi fig. 1. (Cervus.)
Lydekker, R. 1885 C, p. 79, fig. 7.
  1898 A, p. 37.
Richardson, J. 1854 A, pp. 20, 115, pl. xxii, fig. 2; pl. xxiii.
Struckmann, C. 1880 A. (Cervus.)
Trouessart, E. L. 1898 A, p. 887.
Tscherski, J. D. 1892 A, p. 199.
Zittel, K. A. 1893 B, p. 404.

Recent in northern Europe and northern America. Pleistocene in Alaska. Has been reported from New England, New York, New Jersey, and Kentucky, but the remains probably belong to *R. caribou*.

ANTILOCAPRIDÆ.

Flower and Lydekker 1891 A, p. 333.
Gadow, H. 1898 A, p. 49. (Cervidæ.)
Murie, J. 1870 A.
Nicholson and Lydekker 1889 A, p. 1345.
Trouessart, E. L. 1898 A, p. 903.

ANTILOCAPRA Ord. Type *A. americana* Ord.

Baird, S. F. 1857 A, p. 665.
Flower and Lydekker 1891 A, p. 333.
Nitsche, H. 1899 A, p. 186.
Rütimeyer, L. 18. (Dicranocerus.)
Zittel, K. A. 1893 B, p. 417.

Antilocapra americana Ord.

Allen, Harrison, 1889 A.
Allen, J. A. 1876 A, p. 48.
Baird, S. F. 1857 A, p. 666, pl. xxv.
Murie, J. 1870 A.
Richardson, J. 1854 A, p. 131, pls. xvi-xix.

Recent; Mexico and California to British America. Pleistocene in lead region of Illinois, Iowa, and Wisconsin.

BOVIDÆ.

Baird, S. F. 1857 A, p. 664. (Cavicornia.)
Baur, G. 1890 B.
Branco, W. 1897 A, p. 27.
Brandt, E. 1888 A. (Cavicornia.)
Brooke, V. 1878 A, p. 884.
Cope, E. D. 1887 B, pp. 379, 394.
  1888 X, p. 1081.
  1889 C, p. 162.
Cope and Wortman 1884 A, pp. 22, 24.
Cuvier, G. 1834 A, vi, p. 217.
Flower W. H. 1874 A.
  1883 D, p. 432.
Flower and Lydekker 1891 A, p. 334.
Gadow, H. 1898 A, p. 49.
Gill, T. 1872 B, pp. 8, 76.
Lydekker, R. 1885 C, p. 1.
  1896 B.
  1898 B.
Nicholson and Lydekker 1889 A, p. 1345.
Nitsche, H. 1899 A, p. 186.
Owen, R. 1866 B.
  1868 A, p. 348.
Richardson, J. 1854 A, p. 28.
Rütimeyer, L. 1862 B.
  1865 A.
  1867 B. (Cavicornia.)
  1877 A.
  1878 A.
  1883 A, p. 10. (Cavicornia.)
Sanson, A. 1878 A.
Steinmann and Döderlein 1890 A, p. 808.
Tomes, C. S. 1898 A, p. 407.
Trouessart, E. L. 1898 A, p. 904.
Turner, H. N. 1850 A.
Weyhe, — 1875 A, p. 119.
Wilckens, M. 1885 E.
Zittel, K. A. 1893 B, p. 425. (Cavicornia.)

ANTILOPINÆ.

Baird, S. F. 1857 A, p. 664.
Flower and Lydekker 1891 A, p. 349. ("Rupicaprine section.")
Nicholson and Lydekker 1889 A, p. 1346. ("Antelopes.")
Rütimeyer, L. 1867 B. (Antilopina.)
1877 A, p. 17. (Antilopina.)
1878 A, p. 78. ("Antilopen.")
Zittel, K. A. 1893 B, p. 415.

NEMORHŒDUS H. Smith.

Smith, H., 1827, Griffith's Anim. Kingd., iv, p. 277.
Flower and Lydekker 1891 A, p. 350.
Rütimeyer, L. 1877 A, p. 43. (Nemorhedus.)
1878 A, p. 99. (Kemas.)
Trouessart, E. L. 1898 A, p. 964.

Nemorhœdus palmeri Cragin.

Cragin, F. W. 1899 A, p. 610, pl. lvii.
1900 A, p. 1.
Pleistocene; Colorado.

CAPRINÆ.

Baird, S. F. 1857 A, p. 664. (Ovinæ.)
Flower and Lydekker 1891 A, p. 351. ("Caprine section.").
Gill, T. 1872 B, pp. 9, 77. (Caprinæ, Ovinae.)
Owen, R. 1868 A, p. 348. (Ovidæ.)
Stehlin, H. G. 1893 A.
Trouessart, E. L. 1898 A, p. 968.
Zittel, K. A. 1893 B, p. 422. (Ovinæ.)

OVIS Linn. Type *O. aries* Linn.

Linnæus, C., 1758, Syst. Nat., ed, 10, i, p. 70.
Flower, W. H. 1885 A.
Flower and Lydekker 1891 A, p. 354.
Owen, R. 1866 B, p. 474, figs. 323, 324.
1868 A, p. 349, fig. 279.
Stehlin, H. G. 1893 A, p. 71.
Trouessart, E. L. 1898 A, p. 975.
Zittel, K. A. 1893 B, p. 424.

Ovis mamillaris Foster.

Foster, J. W. 1837 A, p. 82, figs. 19 *a*, *b*.
De Kay, J. E. 1842 C, p. 112.
Leidy, J. 1869 A, p. 375.
Roger, O. 1896 A, p. 244.
Trouessart, E. L. 1898 A, p. 978.
Pleistocene?; Ohio.
A doubtful fossil.

OVIBOS Blainv. Type *O. moschatus* (Zimm.).

Blainville, H. M. D., 1816, Bull. Soc. Philom., p. 76.
Agassiz, L. 1853 A.
Baird, S. F. 1857 A, p. 680.
Dawkins, W. B. 1872 A.
Flower and Lydekker 1891 A, p. 357.
Leidy, J. 1852 F, p. 71. (Boötherium.)
1853 A, p. 12. (Boötherium.)
1870 M, p. 97. (Boötherium.)
Lönnberg, E. 1900 A, p. 686.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1350.
Owen, R. 1856 C, p. 124.
Richardson, J. 1854 A, p. 120. (Bubalus.)
Rütimeyer, L. 1868 A.
1898 B, p. 139.
Zittel, K. A. 1893 B, p. 424.

Ovibos appalachicolus Rhoads.

Rhoads, S. N. 1895 A, p. 248. (Bison.)
Lucas, F. A. 1899 A, p. 756.
Rhoads, S. N. 1897 A, p. 492.
Pleistocene; Pennsylvania.

Ovibos bombifrons (Harlan).

Harlan, R. 1825 A, p. 271. (Bos.)
Cooper, W. 1831 A, pp. 173, 206. (Bos.)
Cooper, Smith, and De Kay 1831 A, p. 371. (Bos.)
Cope and Wortman 1884 A, p. 24.
Dawkins, W. B. 1870 A, p. 233. (Ovibos.)
1872 A, p. 29. (Boötherium.)
De Kay, J. E. 1828 A, p. 286. (Bos.)
1842 C, p. 110. (Bos.)
Harlan, R. 1834 B, p. 71. (Bos.)
1835 B, p. 275. (Bos.)
Leidy, J. 1852 F, p. 71. (Boötherium.)
1853 A, p. 17, pl. iv, fig. 2; pl. v, figs. 1, 2. (Boötherium.)
1854 G, p. 210. (Boötherium.)
1869 A, p. 374.
Lydekker, R. 1885 C, p. 39.
Meyer, H. 1835 A, p. 143. (Bos.)
Pictet, F. J. 1853 A, p. 366.
Roger, O. 1896 A, p. 244. (O. priscus.)
Rütimeyer, L. 1865 A, p. 328. (O. priscus.)
1868 A, pp. 9, 17. (O. priscus.)
Trouessart, E. L. 1898 A, p. 984, in part only.
Wistar, C. 1818 A, p. 379, pl. xi, figs. 10, 11. (No systematic name.)
Pleistocene; Kentucky.

Ovibos cavifrons Leidy.

Leidy, J. 1852 F, p. 71. (Boötherium or Ovibos.)
Agassiz, L, 1851 B, p. 179. (Bos bombifrons.)
Cooper, W. 1831 A, pp. 173, 206. (Bos pallasii.)
Cope and Wortman 1884 A, p. 24.
Dawkins, W. B. 1870 A, p. 233.
1872 A, p. 29. (Boötherium.)
De Kay, J. E. 1828 A, p. 291, pl. vi. (Bos pallasii.)
1842 C, p. 110. (Bos pallasii.)
Giebel, C. G. 1847 A, p. 154. (B. pallasii.)

Godman, J. D. 1828 A, p. 244. ("De Kay's fossil ox.")
Harlan, R. 1834 B, p. 72. (Bos pallasii.)
1835 B, p. 276. (B. pallasii.)
Leidy, J. 1853 A, p. 12, pl. iii, figs. 1, 2; pl. iv, fig. 1. (Boötherium.)
1854 G, pp. 209, 210. (Boötherium.)
1869 A, p. 374.
1870 L.
1870 M, p. 97. (Boötherium.)
Lydekker, R. 1885 C, p. 40. (O. bombifrons, in part.)
1898 B, p. 148. (O. bombifrons, in part.)
McGee, W J 1887 A, p. 217.
Meyer, H. 1835 A, p. 155. (B. pallasii.)
Pictet, F. J. 1853 A, p. 366. (Bos pallasii.)
Richardson, J. 1854 A, pp. 25, 120, pl. xi, figs. 2–4. (Ovibos maximus.)
Rütimeyer, L. 1865 A, p. 327. (O. priscus.)
St. John, S. 1851 A, p. 235. (Bos bombifrons.)
Trouessart, E. L. 1898 A, p. 986. (O. bombifrons, in part.)
Wailes, B. L. C. 1854 A, p. 286. (Boötherium.)
Zittel, K. A. 1893 B, p. 425. (O. priscus.)

Pleistocene; Indian Territory, Missouri, Kentucky, Ohio, Iowa, Alaska.

Ovibos moschatus (Zimm.).

Zimmermann, E., 1780, Geog. Gesch., ii, p. 86. (Bos.)
Baird, S. F. 1857 A, p. 681.
Buckland, Wm. 1831 A, pp. 597, 605. ("Musk-ox.")
Cuvier, G. 1834 A, vi, p. 311, pl. clxxi, figs. 15–17. (Bos.)
Dall, W. H. 1869 A. ("Musk-ox.")
Dawkins, W. B. 1872 A.
1883 A.
Gratacap, L. P. 1896 A, p. 994.
Leidy, J. 1854 G, p. 210.
1869 A, p. 373.
Lönnberg, E. 1900 A, p. 686, figures.
Lydekker; R. 1888 C, p. 38.
1898 B, p. 142.
Owen, R. 1856 C, p. 124, figs. 3–6. (Bubalus.)
Richardson, J. 1854 A, pp. 22, 66, 119, pls. ii–v; pl. xi, figs. 1–5; pl xiv, fig. 5.
Roger, O. 1896 A, p. 244.
Rütimeyer, L. 1868 A, p. 6, figs. 1, 2.
Trouessart, E. L. 1898 A, p. 984.
Tscherski, J. D. 1892 A, p. 153, pl. iv, figs. 3–6.
Woodward, H. 1894 A, 1.

Recent; northern North America, Greenland. Pleistocene; Alaska, Greenland, northern Europe, and Asia.

BOVINÆ.

Flower and Lydekker 1891 A, p. 360. ("Bovine section.")
Gill, T. 1872 B, pp. 8, 77.
Roger, O. 1896 A, p. 244.
Stehlin, H. G. 1893 A.
Trouessart, E. L. 1898 A, p. 985.
Zittel, K. A. 1893 B, p. 425.

BISON H. Smith. Type *Bos bison* Linn.

Smith, H., 1827, in Griffith's Anim. Kingd., v, p. 373.
Allen, J. A. 1876 B.
Baird, S. F. 1857 A, p. 682. (Bos.)
Brandt, F. 1867 C, p. 150.
Cope, E. D. 1889 G, p. 131.
Desor, E. 1852 A, p. 58. (Harlanus.)
Flower and Lydekker 1891 A, p. 360. (Bos.)
Leidy, J. 1871 C, p. 344.
Lucas, F. A. 1897 A.
1899 A.
Lydekker, R. 1898 B, p. 5 (Bos.); p. 50 (Bison, as subgenus).
Marsh, O. C. 1877 E.
Owen, R. 1846 A, p. 94. (Harlanus, type *H. americanus*=B. latifrons.)
1847 D, p. 18. (Harlanus.)
1856 C, p. 129.
Pictet, J. F. 1853 A, p. 303, (Harlanus.)
Rütimeyer, L. 1865 A, p. 335.
Trouessart, E. L. 1898 A, p. 994.
Tscherski, J. D. 1892 A, p. 75.
Zittel, K. A. 1893 B, p. 430.

Bison alleni Marsh.

Marsh, O. C. 1877 D, p. 252.
Blake, W. P. 1898 A, pp. 71, 72.
Cope, E. D. 1877 Y, p. 629.
1894 A, p. 68. (Bos crampianus; no description.)
Cope, E. D. 1894 H, p. 456, pl. xxii, figs. 1–4. (Bos crampianus.)
King, C. 1878 A, p. 430.
Lucas, F. A. 1897 A,
1899 A, pp. 756, 765, pls. lxxvii–lxxx; text fig. 2; text fig. 1^2.
Matthew, W. D. 1899 A, p. 74.
Rhoads, S. N. 1897 A, p. 488, pl. xii, fig. 5. (Bos crampanius.)
Roger, O. 1896 A, p. 246.
Trouessart, E. L. 1898 A, p. 995.
Williston, S. W. 1897 I, p. 302. (B. crampianus, B. alleni.)
1898 I, p. 92. (B. crampianus, B. alleni.)

Miocene (Loup Fork; Kansas, Oklahoma, Idaho.

Bison antiquus Leidy.

Leidy, J. 1852 H, p. 117.
Allen, J. A. 1876 B, p. 21,? pl. iii, figs. 1, 3, 6, 8, 10.
Cope, E. D. 1869 E, p. 176. (Bos antiquus.?)
1894 H, p. 457. (Syn. of Bos americanus.)
Leidy, J. 1853 A, p. 11, pl. ii, fig. 1.
1854 G, p. 210.
1867 A, p. 85. (B. latifrons?.)
1869 A, p. 371. (B. latifrons, in part.)
1870 H, p. 13. (Bos.)
1873 B, pp. 253, 318, in part; pl. xxviii, figs. 4, 5, 6,? 7.? (B. latifrons.)

Lucas, F. A. 1899 A, p. 759, pl. lxvii-lxx.
1899 B, p. 17.
Lydekker, R. 1898 B, p. 61. (Syn. of Bos priscus.)
Middleton and Moore 1900 A, p. 178, plate.
Rhoads, S. N. 1897 A, p. 484 (B. antiquus); p. 501, pl. xii, fig. 2 (B. californicus).
Richardson, J. 1854 A, p. 139.
Rütimeyer, L. 1865 A, p. 336.
1868 A, p. 60. (B. priscus.)
Zittel, K. A. 1893 B, p. 430.
Pleistocene; Kentucky, Virginia?, Illinois?, California.

Bison bison (Linn.).

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 72. (Bos.)
Unless otherwise indicated, the following authors refer to this species under the name *Bison americanus*.
Allen, J. A. 1876 B, pl. xi, fig. 2; pl. iii, figs. 2, 4, 7, 9, 11; pl. v, figs. 1-8; pl. vi, figs. 1-8; pl. vii, figs. 1-6, 9, 10; pl. viii, figs. 1-11; pl. ix, figs. 1-8; pl. x, figs. 1-12; pl. xi, figs. 1-10; pl. xii, figs. 1-6.
Baird, S. F. 1857 A, p. 682. (Bos.)
Cooper, W. 1831 A, p. 43. (Bos americanus.)
Cooper, Smith, and De Kay 1831 A, p. 371. (Bos americanus.)
Cope and Wortman 1884 A, p. 24.
De Kay, J. E. 1842 C, p. 110.
Knight, ,— 1835 A, p. 166. ("Buffalo.")
Leidy, J. 1853 A, p. 5.
1854 G, p. 210.
1869 A, p. 371.
1870 K, p. 69. (Bos americanus.)
1880 A, p. 347.
1889 E, p. 22.
1889 H, p. 5.
1892 A.
Lydekker, R. 1898 B, p. 79. (Bos.)
Mercer, H. C. 1894 A, p. 98.
Packard, A. S. 1867 A, pp. 243, 245, 246, 257, 261.
Rhoads, S. N. 1897 A, p. 484, pl. xii, fig. 1.
Richardson, J. 1854 A, p. 139, pl. vi, figs. 3, 4; pl. vii, figs. 4, 5; pl. viii, figs. 9-12.
Rütimeyer, L. 1865 A, p. 335.
1867 B, p. 99.
1868 A, p. 58.
Shaler N. S. 1876 A, p. 234.
Trouessart, E. L. 1898 A, p. 995.
Underwood, L. 1890 A, p. 953.
Williston, S. W. 1897 I, p. 302.
1898 I, p. 91.
Wyman, J. 1862 A, p. 421. ("Bos.")
Within recent times occupying a large portion of N. America. Pleistocene; Illinois, Iowa, Wisconsin, Kansas, Colorado, Pennsylvania, New York, South Carolina, Kentucky.

Bison crassicornis Richardson.

Richardson, J. 1854 A, pp. 40, 139, pl. ix; pl. xi, fig. 6; pl. xii, figs. 1-4; pl. xiii, figs. 1, 2; pl. xv, figs. 1-4.
Allen, J. A. 1876 B, pp. 14, 15, 21, ?pl. viii, fig. 12. (Syn. of B. antiquus.)
Buckland, W. 1831 A, p. 595, pl. iii, figs. 1-7. (Bos urus.)
Cope, E. D. 1894 H, p. 457. (Bos.)
Leidy, J. 1854 G, p. 210. (Bison priscus, B. crassicornis.)
1869 A, p. 371 (Bison priscus); p. 372 (Syn. of Bison latifrons).
Lucas, F. A. 1897 A.
1899 A, p. 760, pls. lxxiii-lxxvi; ?pl. lxxiii; text figs. 1, 2.
1899 B, p. 18.
Lydekker, R. 1885 C, pp. 25, 26. (Bos bonasus, var. priscus.)
1898 B, p. 61. (Syn. of Bos priscus.)
Rhoads, S. N. 1897 A, p. 500, pl. xii, figs. 3, 6. (B. alaskensis.)
Richardson, J. 1854 A, pp. 33, 139, pl. vi, figs. 5, 6; pl. vii, fig. 1; pl. x, figs. 1-6. (B. priscus?.)
Woodward, H. 1894 A. (B. priscus.)
Pleistocene; Alaska.

Bison ferox Marsh.

Marsh, O. C. 1877 D, p. 252.
Blake, W. P. 1898 A, pp. 71, 72.
Cope, E. D. 1877 Y, p. 629.
King, C. 1878 A, p. 430.
Lucas, F. A. 1899 A, p. 766, pl. lxxxi.
Matthew, W. D. 1899 A, p. 74.
Rhoads, S. N. 1897 A, pp. 489, 500.
Roger, O. 1896 A, p. 246.
Trouessart, E. L. 1898 A, p. 995.
Miocene (Loup Fork); Nebraska.

Bison latifrons (Harlan.)

Harlan, R. 1825 A, p. 273. (Bos.)
Allen, J. A. 1876 B, p. 7, pl. i; pl. ii, figs. 1-4; pl. vii, fig. 11.
Blainville, H. M. D. 1864 A, iv AA, p. 187. (Sus americanus.)
Blake, W. P. 1898 A, pp. 66, 71 (Bos arizonica); p. 69 (Bison latifrons).
1898 B, p. 247. (B. latifrons, B. arizonica.)
Bojanus, L. H. 1827 A, p. 427. (Syn. of Urus priscus.)
Brandt, F. 1867 C.
Broadhead G. C. 1870 B. (Bos.)
Carpenter, W. 1846 A, p. 246, figs. 1, 2. ("Extinct ox.")
Collett, J. in Cope and Wortman 1884 A, p. 24, footnote.
Cooper, W. 1831 A, p. 174. (Bos.)
Cope, E. D. 1884 G, p. 21. (Bos.)
1889 F.
1889 G, p. 131.
1894 H, p. 457. (Bos.)
Cope and Wortman 1884 A, p. 24.
Couper, J. H. 1842 A, p. 216. ("Bos," Sus americanus.)
Cuvier, G. 1808 B, p. 382, pl. xxxiv, fig. 2. ("Aurochs.")
1834 A, vi, p. 287, pl. clxxiii, fig. 2. ("Aurochs.")
De Kay, J. E. 1828 A, p. 286. (Bos.)
1842 C, p. 110. (Bos.)
Faujas, St. F. 1802 A, p. 190, pl. xliii. ("Bœuf fossil.")
Flower and Lydekker 1891 A, p. 364. (Bos.)
Giebel, C. G. 1847 A, p. 153 (Bos priscus, in part); p. 174 (Sus americanus).

Godman, J. D. 1828 A, iii, p. 243, pls. opp. pp. 242, 245. ("Latifrons.")
Harlan, R. 1834 B, p. 71. (Bos.)
1835 B, p. 276. (Bos.)
1842 B, p. 143, pl. iii, fig. 1. (?Sus americana.)
Leidy, J. 1852 H, p. 117.
1853 A, p. 8, pls. i, ii, figs. 2-7.
1854 C, p. 89.
1854 G, p. 210.
1860 B, p. 109, pl. xvii, figs. 15, 16. (Identification doubtful.)
1867 A, p. 85.
1869 A, p. 371.
1871 C, p. 345, in part.
1889 C, p. 12.
Lucas, F. A. 1899 A, p. 767, pls. lxxxii, lxxxiii.
Lydekker, R. 1885 C, p. 27.
1898 B, p. 92. (Bos.)
Meyer, H. 1835 A, p. 141. (Syn. of Bos priscus.)
Owen, R. 1846 A, p. 94. (Harlanus americanus.)
1847 D, p. 20, pl. vi. (H. americanus.)
Peale, R. 1803 A, p. 325, pl. vi. ("Great Indian buffalo.")
Pictet, F. J. 1853 A, p. 366. (Bos.)
Rafinesque, C. S. 1831, Enum. remark, nat. objects (Taurus latifrons, T. gigas); 1832-33, Atlantic Jour., p. 28 (Taurus latifrons).
Rhoads, S. N. 1897 A, p. 486, pl. xii, fig. 4.
Roger, O. 1896 A, p. 208 (Harlanus americanus.)
p. 246 (Bison latifrons.)
Rütimeyer, L. 1865, p. 336.
1868 A, p. 60. (B. priscus.)
Sanson, A. 1878 A, p. 757. (Bos.)
Shaler, N. S. 1876 A, p. 235. (Bos.)
Smith, H. P. 1887 A, p. 19, pl. i.
Stehlin, H. G. 1899 A, pp. 21, 118. (Platygonus ziegleri.)
Trouessart, E. L. 1898 A, p. 817 (Harlanus americanus); p. 995 (Bison latifrons).
Wailes, B. L. C. 1854 A, p. 286.
Whitney, J. D. 1879 A, p. 247.
Wilckens, M. 1885 B, p. 270. (Sus americana.)
Zittel, K. A. 1893 B, p. 430.

Pleistocene; Kentucky, South Carolina?, Mississippi, Ohio, Georgia?, Texas, Florida, Arizona, Mexico.

Bison occidentalis Lucas.

Lucas, F. A. 1898 D, p. 678.
Allen, J. A. 1876 B, p. 34, pl. iv. (B. antiquus.)
?Dall, W. H. 1869 A, p. 136. ("Buffalo.")
?Hay, R. 1885 A, p. 98. ("Bison.")
?Leidy, J. 1870 K, p. 69. (Bos americanus.)
Lucas, F. A. 1899 A, p. 758, pls. lxv, lxvi.
1899 B, p. 17, pls. viii, ix.
Stewart, A. 1897 B, p. 127, pl. xvii; text fig. 1. (B. antiquus.)
Williston, S. W. 1897 I, p. 302. (B. antiquus.)
1898 I, p. 91. (B antiquus.)

Pleistocene; Alaska, Kansas.

Bos bovis.—This species has been reported from Ashley River, South Carolina, by F. S. Holmes (1850 B, p. 203). Leidy (1869 A, p. 443), characterizes it as a doubtful fossil. See also Holmes, F. S. 1858 A, in which paper are found extracts from letters written by Louis Agassiz and Dr. Leidy.

Order ANCYLOPODA Cope.

Cope, E. D. 1889 I, p. 153.
Ameghino F. 1894 A, p. 311.
Cope, E. D. 1889 C.
1891 N, p. 76.
1898 B, p. 120. (Chalicotheria.)
Gadow, H. 1898 A, p. 47.
Hay, O. P. 1899 F, p. 682.
Marsh, O. C. 1892 D, p. 448. (Chalicotheria.)
1897 B, p. 144. (Chalicotheria.)
Osborn, H. F. 1893 D, p. 43.
Osborn, H. F. 1893 F.
1893 J. (Perissonychia.)
1893 K.
1898 A, p. 146.
Osborn and Wortman 1893 A, p. 4. (Ord. Ancylopoda; subord. Perissonychia.)
Roger, O. 1896 A, p. 196.
Trouessart, E. L. 1898 A, p. 693.
Woodward, A. S. 1898 B, p. 307.

Superfamily CHALICOTHERIOIDEA.

Gill, T. 1872 B, p. 71.
Osborn, H. F. 1898 I, p. 79.
Scott and Osborn 1890 B, p. 99.

CHALICOTHERIIDÆ.

Gill, T. 1872 B, pp. 8, 72.
Ameghino, F. 1891 D, p. 284.
1894 A, p. 316.
Cope, E D. 1879 C, p. 228.
1881 G, pp. 378, 379, 395.
1881 O.
1884 O, pp. 615, 694.
1887 N.
1891 L, p. 1117.
Earle, C. 1892 C, p. 276.
Flower and Lydekker 1891 A, p. 413.
Haeckel, E. 1895 A, p. 546. (Chalicotherida.)
Lydekker, R. 1886 A, p. 161.
Marsh, O. C. 1877 D, p. 249. (Moropodidæ.)
Marsh, O. C. 1877 E. (Moropodidæ.)
1897 B, p. 145. (Moropodidæ.)
Nicholson and Lydekker 1889 A, p. 1372.
Osborn, H. F. 1891 D.
1892 C.
1893 D, p. 43.
Osborn and Wortman 1893 A, p. 13.
Roger, O. 1896 A, p. 196.
Schlosser, M. 1886 A, p. 258.
1886 B, p. 18.
Steinmann and Döderlien 1890 A, p. 776.
Wortman, J. L. 1882 B, p. 723.
1883 A, p. 709.
Zittel, K. A. 1893 B, p. 308.

CHALICOTHERIUM Kaup. Type *C. goldfussi* Kaup.

Kaup, J. J. 1833, Oss. Foss. Darmstadt, pt. ii, p. 4.
Ami, H. M. 1891 A.
Bronn, H. G. 1838 A, p. 1201, pl. xlvi, fig. 2.
Cope, E. D. 1884 O, p. 695.
1887 N, p. 1061.
1889 P, p. 658.
1891 A, p. 7.
Depéret, C. 1892 A, p. 61.
Earle, C. 1892 C, p. 276.
Filhol, H. 1891 A, p. 294.
Flower and Lydekker 1891 A, p. 413.
Gaudry, A. 1875 B.
1877 A.
Kowalevsky, W. 1873 A, p. 175.
Lydekker, R. 1886 A, p. 162.
Marsh, O. C. 1874 A, p. 82.
1877 E.
1884 F, p. 172.
1897 B, p. 143.
Nicholson and Lydekker 1889 A, p. 1373.
Osborn, H. F. 1888 D.
1891 D, p. 911.
1892 C.
1892 G.
Osborn, H. F. 1893 D, pp. 6, 43.
1893 F, fig. 1.
1893 K.
Osborn and Wortman 1893 A.
Pictet, F. J. 1853 A, p. 337.
Schlosser, M. 1883 A.
1886 B, p. 19.
1893 B, p. 659.
Scott, W. B. 1891 A, p. 3.
1891 D, p. 90.
Scott and Osborn 1890 B, p. 99.
Steinmann and Döderlein 1890 A, p. 778.
Trouessart, E. L. 1898 A, p. 697.
Wortman, J. L. 1883 A, p. 710.
Zittel, K. A. 1893 B, p. 312.

Chalicotherium bilobatum Cope.

Cope, E. D. 1889 I, p. 151.
1891 A, p. 8, pl. iv, fig. 1.
Matthew, W. D. 1899 A, p. 58.
Osborn and Wortman 1893 A, p. 2.
Roger, O. 1896 A, p. 197.
Trouessart, E. L. 1898 A, p. 698.
Oligocene (White River); Canada.

MOROPUS Marsh. Type *M. distans* Marsh.

Marsh, O. C. 1877 D, p. 249.
Flower and Lydekker 1891 A, pp. 190, 413.
Marsh, O. C. 1877 E, p. 251.
1892 D, p. 448.
1897 B, p. 144.
Matthew, W. D. 1899 A, p. 72.
Nicholson and Lydekker 1889 A, p. 1373.
Osborn, H. F. 1891 D, p. 911.
1893 D, p. 43.
1893 F, p. 122.
Osborn and Wortman 1893 A, p. 2. (Syn. of Chalicotherium.)
Scott, W. B. 1893 B, p. 1.
Wortman, J. L. 1897 B, p. 60.
Zittel, K. A. 1893 B, p. 314.

Moropus distans Marsh.

Marsh, O. C. 1877 D, p. 249.
King, C. 1878 A, p. 424.
Matthew, W. D. 1899 A, p. 63.
Osborn, H. F. 1893 F, p. 122.
Roger, O. 1896 A, p. 197.
Trouessart, E. L. 1898 A, p. 698.
Miocene (John Day); Oregon.

Moropus elatus Marsh.

Marsh, O. C. 1877 D, p. 250.
King, C. 1878 A, p. 430.
Matthew, W. D. 1899 A, p. 72.
Osborn, H. F. 1893 F, p. 122.
Roger, O. 1896 A, p. 197.
Scott and Osborn 1890 B, p. 99, fig. 18. (Chalicotherium.)
Trouessart, E. L. 1898 A, p. 698.
Zittel, K. A. 1893 B, p. 315, fig. 255.
Miocene (Loup Fork); Nebraska.

Moropus senex Marsh.

Marsh, O. C. 1877 D, p. 250.
King, C. 1878 A, p. 424.
Matthew, W. D. 1899 A, p. 63.
Osborn, H. F. 1893 F, p. 122.
Roger, O. 1896 A, p. 197.
Trouessart, E. L. 1898 A, p. 698.
Miocene (John Day); Oregon.

SPHENOCŒLUS Osb. Type *S. uintensis* Osb.

Osborn, H. F. 1895 A, p. 98.
A genus of doubtful position.

Sphenocœlus uintensis Osb.

Osborn, H. F. 1895 A, p. 98. figs. 12–15.
Matthew, W. D. 1899 A, p. 50.
Roger, O. 1896 A, p. 197.
Eocene (Uinta); Utah.

Order AMBLYPODA Cope.

Cope, E. D. 1875 C, p. 28.
1875 M.
1877 K, p. 179.
1877 L, p. 619. (Protencephala, in part.)
1877 S. (Protoencephala, in part; Amblypoda.)
1881 J.
1882 A (Amblypoda); p. 447 (Hyodonta.)
1882 E, pp. 165, 177.
1882 Y.
1883 D.
1884 E.
1884 O, pp. 167, 378, 507.
1884 EE.
1885 F.
1885 O.
1886 C, p. 616.
1886 K, p. 721,
1887 N. (Amblypoda, Hyodonta.)
1887 S, p. 459.
1888 F.
1889 C.
1889 R, p. 877.
1891 N, p. 84.
1898 B, p. 124.
Cope and Wortman 1884 A, p. 12.
Earle, C. 1892 B.
Flower, W. H. 1876 B, xiii, p. 388.
1883 D, p. 426.
Flower and Lydekker 1891 A, p. 437.
Gadow, H. 1898 A, p. 45.
Haeckel, E. 1895 A, p. 541.
Hay, O. P. 1899 F, p. 682.
Lydekker, R. 1885 E, p. 469.
Lydekker, R. 1886 A, p. 175.
1896 B, p. 173.
Marsh, O. C. 1884 F, pp. 173, 193. (Amblydactyla.)
1892 C, p. 323. (Amblydactyla.)
1893 C, p. 324. (Amblydactyla.)
Nicholson and Lydekker 1889 A, p. 1383.
Osborn, H. F. 1888 F.
1890 D, p. 538.
1893 A, pp. 383, 459.
1893 D.
1898 A, p. 146.
1898 H.
1900 C, p. 567.
Roger, O. 1896 A, p. 155.
Rütimeyer, L. 1890 A, p. 16.
Science 1885 A, pp. 489, 490. (Amblypoda vs. Amblydactyla.)
Schlosser, M. 1887 A.
1888 A, p. 586.
1889 A.
1890 C.
1890 D.
Scott, W. B. 1886 A, p. 303.
1892 A, p. 439.
Steinmann and Döderlein 1890 A, p. 762.
Tomes, C. S. 1898 A, p. 440.
Trouessart, E. L. 1898 A, p. 712.
Weithofer, K. A. 1888 B.
Woodward, A. S. 1898 B, p. 292.
Wortman, J. L. 1882 B, p. 721.
1885 A, p. 297.
Zittel, K. A. 1893 B, pp. 207, 432, 725.

[Genera of uncertain position, possibly ancestral to the *Amblypoda*.]

SYNCONODON Osb. Type *S. sexcuspis* Osb.

Osborn, H. F. 1898 H, p. 171.

Synconodon sexcuspis Osb.

Osborn, H. F. 1898 H, pp. 171, 182, fig. 1 C.
Osborn, H. F. 1893, p. 320, pl. viii, fig. C. (No name.)
Trouessart, E. L. 1899 A, p. 1346.
Cretaceous (Laramie) Wyoming.

ECTOCONODON Osb. Type *E. petersoni* Osb.

Osborn, H. F. 1898 H, p. 171.

Ectoconodon petersoni Osb.

Osborn, H. F. 1898 H, pp. 171, 182, fig. 1 F.
Osborn, H. F. 1893, p. 320, pl. viii, fig. F. (No name.)
Trouessart, E. L. 1899 A, p. 1346.
Cretaceous (Laramie) Wyoming.

PROTOLAMBDA Osb. Type *P. hatcheri* Osb.

Osborn, H. F. 1898 H, p. 172.

Protolambda hatcheri Osb.

Osborn, H. F. 1898 H, pp. 172, 182, fig. 1 A.
Osborn, H. F. 1893, p. 320, pl. viii, fig. A. (No name.)
Trouessart, E. L. 1899 A, p. 1346.
Cretaceous (Laramie) Wyoming.

Suborder TALIGRADA Cope.

Cope, E. D. 1883 Z.
1884 O, p. 600.
1884 EE, p. 1111.
1889 R, p. 877.
1898 B, p. 124.
Flower and Lydekker 1891 A, p. 436.
Nicholson and Lydekker 1889 A, p. 1385.
Osborn, H. F. 1898 H, pp. 177, 180, 181.
Osborn and Earle 1895 A, p. 43.
Wortman, J. L. 1885 A, p. 298.

PERIPTYCHIDÆ.

Cope, E. D. 1882 D.
1882 A, pp. 446, 447.
1883 O.
1884 O, pp. 384, 385.
1884 AA, pp. 793, 794.
1887 N, p. 986.
1888 K, p. 162.
1889 C, p. 177.
1897 B.
Earle, C. 1893 D, p. 51.
Haeckel, E. 1895 A, p. 584. (Periptychida.)
Lydekker, R. 1886 A, p. 172.
Matthew, W. D. 1897 C, pp. 262, 294, 295.
1899 A, p. 29.
Nicholson and Lydekker 1889 A, pp. 1323, 1379.
Osborn, H. F. 1898 A, p. 146.
1898 H, p. 181.
Osborn and Earle 1895 A, pp. 47, 52, 61.
Pavlow, M. 1887 A, p. 354.
Roger, O. 1896 A, p. 164.
Schlosser, M. 1886 B.
1888 A, p. 585.
1890 C.
Scott, W. B. 1892 A, p. 428.
Steinmann and Döderlein 1890 A, p. 750.
Zittel, K. A. 1893 B, p. 216.

PERIPTYCHINÆ.

Osborn and Earle 1895 A, p. 52.
Matthew, W. D. 1897 C, pp. 295, 296.
Osborn, H. F. 1898 H, p. 182.
Trouessart, E. L. 1898 A, p. 722.

PERIPTYCHUS Cope. Type *P. carinidens* Cope.

Cope, E. D. 1881 H, p. 484.
1881 H, p. 487. (Catathlæus, type *C. rhabdodon.*)
1881 N.
1881 U. (Catathlæus.)
1882 A, p. 447.
1882 E, p. 158.
1882 F, p. 96. (Periptychus, Catathlæus.)
1882 DD.
1883 G.
1883 O.
1883 AA.
1884 E.
1884 O, pp. 382, 387.
1884 AA, pp. 794, 796.
1884 EE, p. 1120.
1887 I, p. 658.
1894 E, p. 868.
Earle, C. 1893 D.
Flower and Lydekker 1891 A, p. 439.
Lydekker, R. 1886 A, p. 172.
Matthew, W. D. 1899 A, p. 28.
Nicholson and Lydekker 1889 A, p. 1379.
Osborn, H. F. 1888 H.
1890 D, p. 532.
1893 B, p. 326.
1898 H, pp. 181, 186.
Osborn and Earle 1895 A, p. 53.
Pavlow, M. 1887 A, p. 354.
Schlosser, M. 1886 B.
Scott, W. B. 1892 A, p. 428.
Steinmann and Döderlein 1890 A, p. 750.
Wortman, J. L. 1886 A, p. 470.
Zittel, K. A. 1893 B, p. 217.

Periptychus carinidens Cope.

Cope, E. D. 1881 N, p. 337.
1881 H, p. 484.
1883 M, p. 561.
1884 O, pp. 403, pl. xxiii*d*, figs. 14, 15; pl. xxiv, fig. 5; pl. xxv*a*, fig. 16.
1884 AA, p. 801.
Cope, E. D. 1888 CC, p. 305 (P. carinidens); pp. 305, 354 (P. brabensis).
Matthew, W. D. 1897 C, pp. 264, 297.
1899 A, p. 29.
Osborn, H. F. 1898 H, p. 182.
Osborn and Earle 1895 A, p. 55. (P. brabensis.)
Roger, O. 1896 A, p. 165.
Trouessart, E. L. 1898 A, p. 722.
Eocene (Torrejon); New Mexico.

Periptychus coarctatus Cope.

Cope, E. D. 1883 Q, p. 168.
1884 K, p. 309.
1884 O, explan., pl. xxix*d*, figs. 7, 8.
1884 AA, p. 802, fig. 10.
1885 J, p. 387.
1888 CC, pp. 305, 354. (P. coarctatus, C. brabensis.)
Matthew, W. D. 1897 C, p. 296.
1899 A, p. 28.
Osborn, H. F. 1898 H, p. 182.
Osborn and Earle 1895 A, p. 54.
Roger, O. 1896 A, p. 165. (P. coarctatus, P. brabensis.)
Eocene (Puerco); New Mexico.

Periptychus rhabdodon Cope.

Cope, E. D. 1881 U, p. 829. (Catathlæus.)
1881 H, p. 487. (Catathlæus.)
1882 C, p. 465.
1883 G, p. 564, pl. ii, figs. 2, 3.
1884 K, p. 309.
1884 O, p. 391, pl. xxiii*f*; pl. xxiii*g*, figs. 1–11; pl. lvii*f*, figs. 1, 2.
1884 AA, p. 794, figs. 2, 6–9.
1887 I, p. 658.
1887 S, p. 268, fig. 44.
1888 CC, p. 305.
Lydekker, R. 1886 A, p. 174, figs. 24, 25.
Matthew, W. D. 1897 C, pp. 264, 296, 320.
1899 A, p. 29.
Osborn, H. F. 1890 D, p. 533, diagrams 6, 7.

Osborn, H. F. 1898 H, p. 182.
Osborn and Earle 1895 A, p. 53.
Pavlow, M. 1887 A, p. 359, figs. 2, 5*a*.
Roger, O. 1896 A, p. 165.
Schlosser, M. 1886 B, p. 35.
Trouessart, E. L. 1898 A, p. 722.
Zittel, K. A. 1893 B, p. 218, figs. 152, 153, 156, 157.
Eocene (Torrejon); New Mexico.

Ectoconus Cope. Type *Periptychus ditrigonus* Cope.

Cope, E. D. 1884 AA, p. 796.
1884 E, p. 313.
1884 O, p. xxxv.
1888 CC, p. 355.
Osborn, H. F. 1893 B, p. 325.
1898 H, p. 173.
Osborn and Earle 1895 A, p. 56.
Schlosser, M. 1886 B, p. 37.
Zittel, K. A. 1893 B, p. 218.

Ectoconus ditrigonus Cope.

Cope, E. D. 1882 C, p. 465. (Periptychus.)
1883 Q, p. 168. (Conoryctes.)
1883 EE, p. 968. (Conoryctes.)
Cope, E. D. 1884 A, p. 796. (Ectoconus.)
1884 O, p. xxxv (Ectoconus); p. 404, pl. xxx*g*, fig. 12 (Periptychus): explan. pl. xxix*d*, figs. 2-6 (Conoryctes).
1884 AA, p. 797, figs. 4, 5.
1888 CC, p. 356.
Matthew, W. D. 1897 C, pp. 264, 320
1899 A, p. 28.
Osborn, H. F. 1898 H, p. 182.
Osborn and Earle 1895 A, p. 56.
Roger, O. 1896 A, p. 165.
Schlosser, M. 1886 B, p. 37, pl. vi, figs. 30, 31.
Trouessart, E. L. 1898 A, p. 723.
Eocene (Puerco); New Mexico.

ANISONCHINÆ.

Osborn and Earle 1895 A, p. 52.
Matthew, W. D. 1897 C, pp. 295, 297.
Osborn, H. F. 1898 H, p. 182.
Trouessart, E. L. 1898 A, p. 720.

Haploconus Cope. Type *H. lineatus* Cope.

Cope, E. D. 1882 V, p. 417.
1882 C, p. 466.
1882 F, p. 96.
1884 O, pp. 386, 415.
1884 AA, p. 795.
1887 I, p. 657.
Lydekker, R. 1886 A, p. 175.
Matthew, W. D. 1897 C, p. 298.
Osborn and Earle 1895 A, p. 58.
Pavlow, M. 1887 A.
Schlosser, M. 1886 B, p. 37.
Steinmann and Döderlein 1890 A, p. 750.
Zittel, K. A. 1893 B, p. 216.

Haploconus angustus Cope.

Cope, E. D. 1881 U, p. 831. (Mioclænus.)
1881 H, pp. 490, 491. (Mioclænus.)
1882 V, p. 418.
1884 O, p. 416, pl. lvii*f*, fig. 6.
1887 I.
1888 CC, p. 304.
Matthew, W. D. 1897 C, p. 298. (Syn. of H. lineatus.)
Roger, O. 1896 A, p. 164 (H. angustus); p. 250 (Tricentes angustus).
Trouessart, E. L. 1898 A, p. 720. (Syn. of H. lineatus.)
Eocene (Torrejon); New Mexico.

Haploconus corniculatus Cope.

Cope, E. D. 1888 CC, p. 349.
Matthew, W. D. 1897 C, p. 298.
1899 A, p. 29.
Roger, O. 1896 A, p. 165.
Trouessart, E. L. 1898 A, p. 720.
Eocene (Torrejon); New Mexico.

Haploconus lineatus Cope.

Cope, E. D. 1882 V, p. 417.
1882 C, p. 466. (H. xiphodon.)
1884 K, p. 309.
1884 O, pp. 416, 417, pl. xxv*e*, figs. 1-4 (H. lineatus); pp. 416, 420, pl. xxv*e*, figs. 5, 6 (H. xiphodon).
1884 AA, p. 804, fig. 13*a*, 13*b* (H. lineatus) fig. 13*c* (H. xiphodon).
1887 I, p. 658.
1888 CC, p. 304. (H. lineatus, H. xiphodon.)
Lydekker, R. 1886 A, p. 175.
Matthew, W. D. 1897 C, pp. 264, 298.
1899 A, p. 29.
Osborn, H. F. 1893 B, p. 325.
Osborn and Earle 1895 A, p. 59.
Roger, O. 1896 A, p. 165. (H. lineatus, H. xiphodon.)
Schlosser, M. 1886 B, p. 37, pl. v, fig. 27.
Scott, W. B. 1892 A, p. 429. (H. xiphodon.)
Zittel, K. A. 1893 B, p. 216, fig. 154.
Eocene (Torrejon); New Mexico.

It is not improbable that this species will prove to be identical with *H. angustus*.

Anisonchus Cope. Type *A. sectorius* Cope.

Cope, E. D. 1881 H, pp. 487, 488.
1882 E, p. 178.
1882 F, p. 96.
1883 AA, p. 408.
1884 E, p. 314.
Cope, E. D. 1884 O, pp. 386, 408.
1884 AA, pp. 795, 808.
1887 I, p. 657.
Matthew, W. D. 1897 C, p. 298.
Nicholson and Lydekker 1889 A, p. 1380.

Osborn and Earle 1895 A, p. 60.
Pavlow, M. 1887 A.
Schlosser, M. 1886 B, p. 37.
Scott, W. B. 1892 A, p. 428.
Trouessart, E. L. 1898 A, p. 721.
Zittel, K. A. 1893 B, p. 216.

Anisonchus gillianus Cope.

Cope, E. D. 1882 C, p. 467. (Haploconus.)
1882 AA, p. 686. (Haploconus.)
1884 O, pp. 409, 411, pl. xxv*e*, fig. 7 (A. gillianus, A. apiculatus); pl. xv*f*, figs.10, 11 (H. gillianus).
1884 AA, p. 803.
1888 CC, pp. 305, 352. (Hemithlæus apiculatus, A. gillianus.)
Matthew, W. D. 1897 C, p. 299.
1899 A, p. 28.
Roger, O. 1896 A, p. 165. (A gillianus, Hemithlæus apiculatus.)
Scott, W. B. 1892 A, p. 428.
Trouessart, E. L. 1898 A, p. 721.
Eocene (Puerco); New Mexico.

Anisonchus sectorius Cope.

Cope, E. D. 1881 H, p. 488.
1881 H, p. 490. (Mioclænus mandibularis.)
1881 U, p. 831. (Mioclænus sectorius, M. mandibularis.)
1882 C, p. 467.
1884 K, p. 309.
1884 O, pp. 325, 339, pl. lvii*f*, fig. 7 (Mioclænus mandibularis); pp. 409, 413, pl. xxv*c*, figs. 5, 6, 8 (Anisonchus sectorius).
1884 AA, p. 803, fig. 12.
1884 CC, p. 305, 351. (A. sectorius, A. mandibularis.)
Matthew, W. D. 1897 C, pp. 298, 299.
1899 A, p. 29.
Osborn and Earle 1895 A, p. 61. (A. sectorius, A. mandibularis.)
Pavlow, M. 1887 A, fig. 9.
Roger, O. 1896 A, p. 164. (A. sectorius, A. mandibularis.)
Schlosser, M. 1886 B, p. 37, pl. vi, fig. 26.
1887 B, p. 221. (Mioclænus mandibularis.)
Scott, W. B. 1892 A, p. 428.
Trouessart, E. L. 1898 A, p. 721.
Eocene (Torrejon); New Mexico.

ZETODON Cope. Type *Z. gracilis* Cope.

Cope, E. D. 1883 Q, p. 169.
1883 EE.
1884 O, explan. pl. xxix*d*, fig. 9.
1884 AA, pp. 795, 804.
Matthew, W. D. 1897 C, p. 299.
Osborn, H. F. 1893 B, p. 325.
Pavlow, M. 1887 A, p. 302.
Schlosser, M. 1886 B, p. 37.
Zittel, K. A. 1893 B, p. 218.

According to Matthew this genus is probably founded on crushed jaws of small specimens of *Anisonchus*.

Zetodon gracilis Cope.

Cope, E. D. 1883 Q, p. 169.
1883 EE.
1884 O, explan. pl. xxix*d*, fig. 9.
1884 AA, pp. 802, 805, fig. 11 *d*, *d'*.
1888 CC, p. 305.
Matthew, W. D. 1897 C, p. 299.
1899 A, p. 28.
Roger, O. 1896 A, p. 165.
Eocene (Puerco); New Mexico.

HEMITHLÆUS Cope. Type *H. kowalevskianus* Cope.

Cope, E. D. 1882 DD, p. 832.
1884 O, pp. 386, 405.
1884 AA, pp. 795, 803.
1884 K, p. 309.
1887 I, p. 657.
1888 CC, p. 352.
Nicholson and Lydekker 1889 A, p. 1380.
Osborn and Earle 1895 A, p. 60.
Pavlow, M. 1887 A.
Schlosser, M. 1886 B, p. 37.
Scott, W. B. 1892 A, p. 428.
Zittel, K. A. 1893 B, p. 217.

Hemithlæus kowalevskianus Cope.

Cope, E. D. 1882 DD, p. 832.
1882 DD, p. 832. (Anisonchus coniferus, in part.)
Cope, E. D. 1884 O, p. 405, pl. xxv, figs. 6, 7 (H. kowalevskianus); p. 409, in part,? pl. xxiv*g*, fig. 6*a–c* (Anisonchus coniferus).
1884 AA, p. 802, fig. 11*c*.
1888 CC, pp. 305, 353, fig. 11,
Matthew, W. D. 1897 C, pp. 264, 297, fig. 11.
1899 A, p. 28.
Osborn and Earle 1895 A, p. 60, fig. 18.
Roger, O. 1896 A, p. 164. (H. kowalevskianus, Anisonchus coniferus.)
Scott, W. B. 1892 A, p. 428. (Anisonchus coniferus.)
Trouessart, E. L. 1898 A, p. 721. (H. kowaleskianus.)
Zittel, K. A. 1898 A, p. 721, fig. 155. (H. kowalewskyanus.)
Eocene (Puerco); New Mexico.

CONACODON Matth. Type *Haploconus entoconus* Cope.

Matthew, W. D. 1897 C, p. 298.
Trouessart, E. L. 1898 A, p. 721.

Conacodon cophater (Cope).

Cope, E. D. 1884 K, p. 321. (Anisonchus.)
1888 CC, pp. 304, 349. (Haploconus.)
Matthew, W. D. 1897 C, pp. 264, 298.
1899 A, p. 28.
Osborn, H. F. 1898 H, p. 182.
Roger, O. 1896 A, p. 164. (Haploconus.)
Trouessart, E. L. 1898 A, p. 721.
Eocene (Puerco); New Mexico.

Conacodon entoconus (Cope.)

Cope, E. D. 1882 AA, p. 686. (Haploconus.)
1882 DD, p. 832. (Anisonchus coniferus, in part.)
1884 O, pp. 416, 421, pl. xxxv*f*, figs. 4, 5 (Haploconus); p. 409, pl. xxiv*g*, fig. 6 (Anisonchus coniferus).
1884 AA, p. 804 (Haploconus); p. 808, fig. 12*c* (Anisonchus coniferus).
1888 CC, p. 304 (Haploconus); p. 305 (Anisonchus coniferus).
Matthew, W. D. 1897 C, pp. 264, 298.
1899 A, p. 28.
Osborn, H. F. 1898 H, p. 182.
Pavlow, M. 1887 A, fig. 10. (Haploconus.)
Roger, O. 1896 A, p. 165.
Schlosser, M. 1886 B, p. 37, pl. vi, fig. 28. (Haploconus.)
Scott, W. B. 1892 A, p. 428. (Haploconus.)
Eocene (Puerco); New Mexico.

PANTOLAMBDIDÆ.

Cope, E. D. 1883 Z.
1884 O, p. 601.
1888 K, p. 162.
1897 B, p. 336.
Haeckel, E. 1895 A, pp. 530, 542. (Pantolambdina.)
Matthew, W. D. 1897 C, p. 294.
Nicholson and Lydekker 1889 A, p. 1385.
Osborn, H. F. 1898 H, p. 182.
Roger, O. 1896 A, p. 155.
Steinmann and Döderlein 1890 A, p. 762.
Zittel, K. A. 1893 B, p. 434.

PANTOLAMBDA Cope. Type *P. bathmodon* Cope.

Cope, E. D. 1882 V, p. 418.
Ameghino, F. 1896 A, p. 445.
Cope, E. D. 1882 F, p. 96.
1883 Z.
1884 O, p. 601.
1884 EE, pp. 1111, 1120.
1885 A, p. 478.
1888 CC, p. 360.
1889 C.
Earle, C. 1892 A, pp. 150, 153.
1892 B.
Matthew, W. D. 1897 C, pp. 308, 319.
Nicholson and Lydekker 1889 A, p. 1385.
Osborn, H. F. 1888 H.
1893 E.
1897 C, p. 1013, fig. 14.
1898 A, p. 146.
1898 F, p. 91.
1898 H, pp. 178, 183, 184.
1898 M, pp. 585, 587.
Osborn and Earle 1895 A, p. 43.
Osborn and Wortman 1892 A, p. 122.
Schlosser, M. 1888 A, p. 585.
Scott, W. B. 1892 A, p. 439.
Zittel, K. A. 1893 B, p. 435.

Pantolambda bathmodon Cope.

Cope, E. D. 1882 V, p. 418.
1883 M, p. 557.
Cope, E. D. 1883 Z, p. 406.
1884 O, p. 603, pl. xxix*b*; pl. xxix*c*, figs. 3–7.
1884 EE, p. 1111, figs. 3–5.
1885 F, p. 55.
1887 S, p. 275, pl. vii, fig. 2.
1888 F, p. 82, fig. 1.
1888 CC, pp. 305, 360.
1889 C, p. 237.
Matthew, W. D. 1897 C, p. 320.
1899 A, p. 29.
Osborn, H. F. 1898 H, pp. 181, 182, 184, figs. 8–13.
Osborn and Earle 1895 A, p. 43, figs. 14–16.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 712.
Eocene (Torrejon); New Mexico.

Pantolambda cavirictus Cope.

Cope, E. D. 1883 Q, p. 169.
1883 EE.
1884 O, explan. pl. xxix*d*, fig. 1.
1884 EE, p. 1113, fig. 6.
1888 F, p. 83, fig. 2.
1888 CC, pp. 305, 360.
Matthew, W. D. 1897 C, p. 320.
1899 A, p. 29.
Osborn, H. F. 1898 H, pp. 172, 179, 183, figs. 2, 7, 13.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 712.
Eocene (Torrejon); New Mexico.

Suborder PANTODONTA Cope.

Cope, E. D. 1873 F, pp. 40, 67.
1875 C, p. 28.
1875 M.
1877 K, p. 182.
1877 S.
1882 A.
1882 E, p. 165.
1883 M, p. 558.
1883 Z.
1884 O, pp. 379, 510, 514, 601.
1884 EE.
Cope, E. D. 1885 O.
1898 B, p. 124.
Lydekker, R. 1886 A, p. 176. (Coryphodontia.)
Marsh, O. C. 1884 F, p. 193. (Coryphodontia.)
1893 C, p. 323. (Coryphodontia.)
Nicholson and Lydekker 1889 A, p. 1385. (Coryphodontia.)
Osborn, H. F. 1893 A, p. 459.
1898 H, pp. 177, 180, 188.
Science 1885 A, p. 490.
Scott, W. B. 1886 A, p. 303.

CORYPHODONTIDÆ.

Marsh, O. C. 1876 D, p. 428.
Cope, E. D. 1872 EE, p. 279. (Bathmodontidæ.)
1873 E, pp. 563, 585. (Bathmodontidæ.)
1873 K. (Bathmodontidæ.)
1882 E, p. 165.
1882 M.
1884 E.
1884 L, p. 324.
1884 O, p. 515.
1884 EE, p. 1192.
1888 F, p. 80.
1893 H.
Earle, C. 1892 B.
Flower and Lydekker 1889 A, p. 438.
Haeckel, E. 1895 A, p. 542. (Coryphodontida.)
Lydekker, R. 1886 A, p. 176.
Marsh, O. C. 1877 A.
1877 E.
1893 C, p. 323.
1893 H.
Matthew, W. D. 1899 A, p. 33.
Nicholson and Lydekker 1889 A, p. 1386.
Osborn, H. F. 1888 H.
1898 H, p. 182.
Roger, O. 1896 A, p. 155.
Rütimeyer, L. 1888 A, p. 13.
Schlosser, M. 1888 A, p. 586.
Steinmann and Döderlein 1890 A, p. 763.
Trouessart, E. L. 1898 A, p. 712.
Zittel, K. A. 1893 B, p. 435.

CORYPHODON Owen. Type *C. eocænus* Owen.

Owen, R. 1845 B, p. 607 pl. cxxxv.
Ameghino, F. 1896 A, p. 445.
Amer. Jour. Science 1873 A.
Cope, E. D. 1872 A. (Bathmodon.)
1872 G, p. 350 (Bathmodon); p. 353 (Loxolophodon).
1872 J, p. 417 (Bathmodon, type *B. radians* Cope); p. 420 (Loxolophodon, type *Bathmodon semicinctus*).
1872 S. (Loxolophodon, in part.)
1872 T, p. 542. (Metalophodon, type *M. armatus* Cope.)
1872 AA. (Bathmodon.)
1872 LL. (Metalophodon.)
1873 A. (Bathmodon.)
1873 D, p. 3. (Bathmodon, Metalophodon.)
1873 E, p. 586 (Bathmodon); pp. 586, 589 (Metalophodon).
1873 F, p. 67 (Bathmodon); pp. 67, 71 (Metalophodon).
1873 K. (Bathmodon, Metalophodon.)
1874 M. (Bathmodon.)
1875 C, pp. 24, 29. (Bathmodon.)
1875 M. (Bathmodon.)
1876 D, p. 64. (Bathmodon.)
1877 K, p. 187.
1877 L.
1877 S.
1878 T.
1882 E, p. 145 (Coryphodon); pp. 165, 175 (Metalophodon); pp. 165, 167 (Ectacodon, type *E. cinctus*); pp. 165, 167 (Manteodon, type *M. subquadratus*).
1882 H, p. 294. (Coryphodon, Bathmodon.)
1882 M. (Coryphodon, Metalophodon, Manteodon.)
1883 U.
1883 Z. (Bathmodon.)
1884 O, pp. 513, 517, 521 (Coryphodon); pp. 517, 544 (Bathmodon); pp. 517, 554 (Metalophodon); p. 517 (Manteodon); pp. 517, 519 (Ectacodon).
1884 EE, pp. 1117, 1194 (Coryphodon); p. 1194 (Ectacodon, Manteodon).
1885 A, p. 478. (Bathmodon.)
1887 S. (Bathmodon, Metalophodon.)
1888 F, p. 85. (Coryphodon, Bathmodon.)
Cope, E. D. 1889 C.
1893 H.
Earle, C. 1892 A, pp. 150, 155 (Metalophodon = Coryphodon); p. 165 (Manteodon); p. 166 (Ectacodon).
1892 B. (Coryphodon, Manteodon.)
Flower and Lydekker 1891 A, p. 437.
Gervais, P. 1859 A, p. 127.
Hébert, Ed. 1856 A.
Huxley, T. H. 1870 A.
L. P. B. 1885 A, p. 190.
Lydekker, R. 1886 A, p. 177.
Maack, G. A. 1865 A, p. 7.
Marsh, O. C. 1876 D.
1877 A.
1877 H.
1878 H.
1884 F, p. 225. (Loxolophodon = Coryphodon.)
1893 C.
1893 H, p. 321.
Nicholson and Lydeckker 1889 A, p. 1387. (Coryphodon, Ectacodon, Manteodon.)
Osborn, H. F. 1890 D, p. 538.
1897 C, p. 1014.
1898 F.
1898 H, pp. 173, 191.
1898 M, p. 585.
Osborn and Wortman 1892 A, pp. 118, 120, 121, figures.
Owen, R. 1846 B, p. 299.
1848 A, p. 126.
1858 B, vol. i, p. 78.
1860 E, p. 322.
1878 D, p. 216, pl. xi.
1886 A.
Pictet, F. J. 1853 A, p. 304.
Rütimeyer, L. 1862 A.
Scott, W. B. 1892 A, p. 439.
Steinmann and Döderlein 1890 A, p. 763.
Trouessart, E. L. 1898 A, p. 712.
Vasseur, G. 1875 A.
Wortman, J. L. 1893 B, p. 426.
Zittel, K. A. 1893 B, p. 438. (Coryphodon, Ectacodon, Manteodon.)

Coryphodon anax Cope.

Cope, E. D. 1882 E, p. 168.
1882 H, p. 294. (Bathmodon pachypus.)
1883 U, p. 68. (Bathmodon pachypus.)
1884 O, pp. 523, 537, pl. xliv*b*; pl. xliv*c*; pl. xliv*f* (C. anax); p. 549, pl. xliv*d*; pl. xliv*e*, figs. 7-13; pl. xliv*g* (Bathmodon pachypus).
1884 EE, p. 1116, figs. 9, 23 (C. anax); p. 1194, figs. 14, 15 (Bathmodon pachypus).
1893 H, p. 251.
Earle, C. 1892 A, pp. 151, 152, 155, 156, 164, fig. 2, H.
Matthew, W. D. 1899 A, p. 33. (Syn. of C. lobatus.)
Osborn, H. F. 1898 H, pp. 191, 197, 198, 204, in part. (Syn. of C. lobatus.)
Osborn and Wortman 1892 A, pp. 83, 119, fig. 15.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 714.
Woodward, A. S. 1898 B, p. 293.
Zittel, K. A. 1893 B, p. 438, fig. 359 (Coryphodon); p. 438 (Ectacodon).
Eocene (Wasatch); Wyoming.
See remarks under *C. lobatus*.

Coryphodon armatus (Cope).

Cope, E. D. 1872 T, p. 543. (Metalophodon.)
1872 LL. (Metalophodon.)
1873 E, p. 589. (Metalophodon.)
1873 F, p. 71. (Metalophodon.)
1873 K. (Metalophodon.)
1877 K, p. 250. (Metalophodon.)
1884 O, p. 555, pl. xlix, figs. 1-7. (Metalophodon.)
1884 EE, p. 1202. (Metalophodon.)
1893 H, p. 251. (Metalophodon.)
Earle, C. 1892 A, p. 151 (Metalophodon); p. 159 ("Metalophodon").
Matthew, W. D. 1899 A, p. 33.
Osborn, H. F. 1898 H, pp. 191, 194, 197, 208, figs. 15, 16, 17, 25.
Roger, O. 1896 A, p. 156.
Trouessart, E. L. 1898 A, p. 713.
Eocene (Wasatch); Wyoming.

Coryphodon cinctus (Cope).

Cope, E. D. 1882 E, p. 167. (Ectacodon.)
1882 M. (Ectacodon.)
1884 O, p. 520, pl. xliv*a*, fig. 6. (Ectacodon.)
1884 EE, p. 1197, fig. 16. (Ectacodon.)
1888 F, p. 84, fig. 3. (Ectacodon.)
1889 C, p. 238, figs. 63, 64. (Ectacodon.)
Earle, C. 1892 A, p. 166, fig. 2, G. (Ectacodon.)
Matthew, W. D. 1899 A, p. 33.
Osborn, H. F. 1898 H, pp. 191, 197, 198, 202, figs. 15, 16.
Roger, O. 1896 A, p. 156. (Ectacodon.)
Trouessart, E. L. 1898 A, p. 714. (Ectacodon.)
Zittel, K. A. 1893 B, p. 438, fig. 360.
Eocene (Wasatch); Wyoming.

Coryphodon curvicristis Cope.

Cope, E. D. 1882 E, pp. 170, 172.
1884 O, pp. 524, 533, pl. xliv*c*.
1884 EE, pp. 1116, 1201, figs. 9, 22.
Earle, C. 1892 A, pp. 151, 156, 163.
Matthew, W. D. 1899 A, p. 33.
Osborn, H. F. 1898 H, pp. 191, 197, 199, 207.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 713.
Eocene (Wasatch); Wyoming.

Coryphodon cuspidatus Cope.

Cope, E. D. 1875 C, pp. 29, 30. (Bathmodon.)
1877 K, p. 206, pl. xlvi, fig. 1.
1881 D, p. 194.
1882 E, p. 170.
1884 O, pp. 523, 525.
1884 EE, pp. 1116, 1202, fig. 9.
1893 H, p. 251.
Earle, C. 1892 A, pp. 155, 156, 161 (C. cuspidatus); p. 162, "No. 276" (C. obliquus).
Matthew, W. D. 1899 A, p. 33. (Syn. of C. elephantopus.)
Osborn, H. F. 1898 H, pp. 191, 197, 199, 206.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 713.
Eocene (Wasatch); New Mexico, Wyoming.

Coryphodon elephantopus Cope.

Cope, E. D. 1874 O, p. 10. (Bathmodon.)
1875 C, p. 29. (Bathmodon.)
1875 F, p. 95, pls. v, vi. (Bathmodon.)
1877 K, pp. 206, 217, pl. l, figs. 5, 6; pls. li, lii, liii; pl. liv, fig. 1.
1882 E, pp. 170, 171.
1884 O. pp. 523, 531, pl. xxix*c*.
1884 EE, p. 1193, figs. 12, 13, 20, 21.
1887 S, p. 269, figs. 45, 46.
1889 C, p. 159, figure.
1891 L, p. 1118.
1893 H, p. 251.
Earle, C. 1892 A, pp. 151, 155, 160, fig. 2, D.
1892 B.
King, C. 1878 A, p. 377.
Lydekker, R. 1886 A, p. 177, fig. 27.
Matthew, W. D. 1899 A. p. 33.
Osborn, H. F. 1898 H, pp. 191, 196, 197, 199, figs. 19, 20.
Osborn and Wortman 1892 A, pp. 83, 119.
Roger, O. 1896 A, p. 155.
Scott, W. B. 1886 A, p. 304.
Trouessart, E. L. 1898 A, p. 713.
Zittel, K. A. 1893 B, p. 436, fig. 357.
Eocene (Wasatch); New Mexico, Wyoming.

Coryphodon hamatus Marsh.

Marsh, O. C. 1876 D, p. 426, figs. 1, 2.
Cope, E. D. 1891 L.
Earle, C. 1892 A, pp. 151, 155, 156, 162.
King, C. 1878 A, p. 377.
Lydekker, R. 1886 A, p. 176.
Marsh, O. C. 1877 A, p. 81, pl. iv.
1884 F, figs. 55, 56, 150, 151.
1885 B, figs. 92, 93, 103, 132, 133.
1893 C, p. 325, pl. vi.
1893 H, pl. xviii, text fig. 1.
Matthew, W. D. 1899 A, p. 33.
Osborn, H. F. 1898 H, pp. 191, 197, 199. 214, in part.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 713.
Woodward, A. S. 1898 B, p. 293, figs. 166-168.
Zittel, K. A. 1893 B, p. 437, figs. 356, 358.
Eocene (Wasatch); Wyoming.

Coryphodon latidens Cope.

Cope, E. D. 1875 C, p. 29. (Bathmodon.)
1877 K, pp. 206, 214.
1882 E, p. 170.
1884 O, p. 523.
1884 EE, p. 1200, fig. 22.
1887 Q.
1888 F, p. 86, fig. 4.
1889 C, p. 241, fig. 25.
1893 H, p. 251.
Earle, C. 1892 A, pp. 151, 160. (Syn.? of C. elephantopus.)
King, C. 1878 A, p. 377,
Matthew, W. D. 1899 A, p. 33.
Osborn, H. F. 1898 H, pp. 191, 197, 199, 206.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 713. (Syn.? of C. elephantopus.)
Eocene (Wasatch); New Mexico, Wyoming.

Coryphodon latipes Cope.

Cope, E. D. 1873 F, pp. 68, 70. (Bathmodon.)
1873 E, pp. 587, 588. (Bathmodon.)
1882 E, p. 170.
1884 O, pp. 523, 526, pls. xxix*a*, figs. 4, 5; pl. xlviii, figs. 7–14.
1893 H, p. 251.
Earle, C. 1892 A, pp. 150, 151.
Matthew, W. D. 1899 A, p. 33.
Osborn, H. F. 1898 H, pp. 191, 197, 199.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 713.
Eocene; New Mexico.

Coryphodon lobatus Cope.

Cope, E. D. 1877 K, pp. 205, 209, pl. xlvi, figs. 2–10.
1882 E, p. 170.
1884 O, p. 523.
Earle, C. 1892 A, pp. 151, 155, 164. (Syn. of C. anax.)
Matthew, W. D. 1899 A, p. 33.
Osborn, H. F. 1898 H, pp. 191, 197, 198; p. 204 in part.
Trouessart, E. L. 1898 A, p. 714. (Syn. of C. anax.)
Eocene; New Mexico, Wyoming.

Earle (1892 A, p. 164) makes this species a synonym of *C. anax*. Should it result that the specimens described as *C. anax*, *C. pachypus*, and *C. lobatus* belong to one species, this must bear the name *C. lobatus*, this name having priority of publication. This course has been followed by Osborn 1898 H, p. 204.

Coryphodon marginatus Cope.

Cope, E. D. 1882 E, pp. 170, 174.
1884 O, pp. 524, 535, pl. xliv*e*, fig. 5.
Earle, C. 1892 A, pp. 151, 163. (Syn.? of C. curvicristis.)
Matthew, W. D. 1899 A, p. 33.
Osborn, H. F. 1898 H, pp. 191, 197, 198, 210.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 714.
Eocene (Wasatch); Wyoming.

Coryphodon molestus Cope.

Cope, E. D. 1874 D, p. 9. (Bathmodon.)
Cope, E. D. 1874 D, p. 8 (Bathmodon simus); p. 9 (B. lomas).
1875 C, p. 29. (Bathmodon molestus, simus, lomas.)
1875 F, p. 95. (Bathmodon molestus, lomas, simus.)
1877 K, pp. 206, 229, pl. lvi; pl. lvii, figs. 1, 2 (C. molestus); pp. 206, 225, pl. lv (C. simus).
1882 E, pp. 170, 171. (C. molestus, C. simus.)
1884 O, p. 524 (C. molestus); pp. 524, 532 (C. simus).
1884 EE, p. 1197. (C. molestus.)
1893 H, p. 251. (C. molestus, C. simus.)
Earle, C. 1892 A, pp. 151, 155, 160. (Syn. of C. elephantopus.)
Matthew, W. D. 1899 A, p. 33. (Syn. of C. latidens.)
Osborn, H. F. 1898 H, pp. 191, 197, 199, 208, fig. 25. (Syn. of C. armatus.)
Trouessart, E. L. 1898 A, p. 714. (Syn. of C. elephantopus.)
Eocene (Wasatch); New Mexico.

Coryphodon obliquus Cope.

Cope, E. D. 1877 K, pp. 205, 207, pl. xlvii, figs. 1–7.
1882 E, p. 170.
1884 O, p. 523.
1893 H, p. 251.
Earle, C. 1892 A, pp. 151, 155, 156, 162. (Except specimen No. 276.)
Matthew, W. D. 1899 A, p. 33. (Syn. of C. elephantopus.)
Osborn, H. F. 1898 H, pp. 191, 196, 197, 199. (Syn. of C. elephantopus.)
Osborn and Wortman 1892 A, pp. 83, 119.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 713.
Eocene (Wasatch); New Mexico.

Coryphodon radians Cope.

Cope, E. D. 1872 J, p. 418. (Bathmodon.)
1872 G, p. 351 (Bathmodon radians); p. 352 (B. semicinctus).
1872 AA. (Bathmodon.)
1873 E, p. 587. (Bathmodon.)
1873 F, p. 68. (Bathmodon.)
1875 C, p. 29. (Bathmodon.)
1877 K, pp. 206, 211. (Coryphodon.)
1881 D, p. 194. (Coryphodon.)
1884 O, p. 544, pls. xlv, xlvi; pl. xlvii, figs. 1–6; pl. xlviii, figs. 1–6. (Bathmodon.)
1888 F, p. 85. (Bathmodon.)
1889 C, p. 239, fig. 64.
Earle, C. 1892 A, pp. 151, 155, 159, fig. 2, B, C.
1892 B.
King, C. 1878 A, p. 377.
Marsh, O. C. 1876 D, p. 425.
Matthew, W. D. 1899 A, p. 33.
Osborn, H. F. 1898 F, pl. x.
1898 H, pp. 191, 197, 198, 213.
1898 M, p. 585, fig. 1.
1898 Q, p. 12.
Osborn and Wortman 1892 A, pp. 83, 119.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 712.
Eocene (Wasatch); Wyoming, New Mexico.

Coryphodon repandus Cope.

Cope, E. D. 1882 C, pp. 170, 171.
1884 O, pp. 524, 532, pl. xlive, figs. 1-4.
Earle, C. 1892 A, pp. 151, 155, 156. (Syn. of C. radians.)
Matthew, W. D. 1899 A, p. 33. (Syn. of C. testis.)
Osborn, H. F. 1898 H, pp. 191, 197, 198, 201.
Trouessart, E. L. 1898 A, p. 712. (Syn. of C. radians.)
Eocene (Wasatch); Wyoming.

Coryphodon semicinctus Cope.

Cope, E. D. 1872 J, p. 420. (Bathmodon, Loxolophodon.)
1872 G, p. 352. (Bathmodon.)
1872 S, p. 488. (Loxolophodon.)
1873 E, pp. 567, 587, 588. (Bathmodon.)
1873 F, pp. 68, 70. (Bathmodon.)
1884 O, p. 544. (Syn.? of C. radians.)
Earle, C. 1892 A, p. 151. (Bathmodon.)
Marsh, O. C. 1872, S. (Loxolophodon.)
1873 B, p. 117. (Loxolophodon.)
1873 K, p. 147. (Loxolophodon.)
1876 D, p. 425.
Osborn, H. F. 1898 H, p. 191.
Trouessart, E. L. 1898 A, p. 712. (Syn.? of C. radians.)
Eocene (Wasatch); Wyoming.

Coryphodon singularis Osb.

Osborn, H. F. 1898 H, pp. 191, 197, 199, 214, fig. 215.
Matthew, W. D. 1899 A, p. 36.
Trouessart, E. L. 1899 A, p. 1346.
Eocene (Wind River); Wyoming.

Coryphodon subquadratus (Cope).

Cope, E. D. 1882 E, p. 166. (Manteodon.)
1882 M, p. 73. (Manteodon.)
1884 O, p. 518, pl. xliva, figs. 1-5. (Manteodon.)
1884 EE, p. 1117, fig. 9f. (Manteodon quadratus.)
Earle, C. 1892 A, pp. 151, 165, fig. 2F. (Manteodon.)
Matthew, W. D. 1899 A, p. 33. (Syn. of C. hamatus.)
Osborn, H. F. 1898 H, pp. 191, 197, 214. (Syn.? of C. hamatus.)
Roger, O. 1896 A, p. 156.
Trouessart, E. L. 1898 A, p. 714. (Manteodon.)
Eocene (Wasatch); Wyoming.

Coryphodon testis (Cope).

Cope, E. D. 1882 E, p. 175. (Metalophodon.)
1882 M. (Metalophodon.)
1884 O, p. 557, pl. xliva, fig. 13. (Metalophodon.)
1884 EE, p. 1197, fig. 16. (Metalophodon.)
1888 E, p. 84, fig. 3. (Metalophodon.)
1889 C, p. 238, fig. 63. (Metalophodon.)
Earle, C. 1892 A, pp. 151, 155, 156, 158, fig. 2, E. 1892 B.
Matthew, W. D. 1899 A, p. 33.
Osborn, H. F. 1898 H, p. 174, 175, 189, 190, 197, 202, figs. 4, 6, 14, 15, 16, 17A, 18C, 18a, 21-23, 29.
1900 F, p. 93, fig. 7.
Roger, O. 1896 A, p. 155.
Trouessart, E. L. 1898 A, p. 713.
Eocene (Wasatch); Wyoming.

Coryphodon ventanus Osb.

Osborn, H. F. 1898 H, pp. 191, 197, 210, figs. 16, 17, 26D.
Matthew, W. D. 1899 A, p. 36.
Trouessart, E. L. 1899 A, p. 1346.
Eocene (Wind River); Wyoming, Colorado.

Coryphodon wortmani Osb.

Osborn, H. F. 1898 H, pp. 191, 197, 199, 212, figs. 18B, 27.
Matthew, W. D. 1899 A, p. 36.
Trouessart, E. L. 1899 A, p. 1346.
Eocene (Wind River); Wyoming.

The following citations are given to descriptions of specifically undetermined remains of *Coryphodon*.

Cope, E. D. 1877 K, p. 237, pl. lvii, figs. 3-7 pl. lviii; p. 241, pl. lviii, fig. 9; pls. lix, l[illegible], p. 247, pl. lxi; p. 248, pl. lxii; pl. lxiii, figs. 1-4.
Osborn, H. F. 1897 G, p. 256.

BATHYOPSIDÆ.

Osborn, H. F. 1898 H, p. 182.

BATHYOPSIS Cope. Type *B. fissidens* Cope.

Cope, E. D, 1881 D, p. 194.
1881 CC, p. 75.
1884 O, pp. 561, 596.
1885 F, pp. 44, 53.
1885 N.
Nicholson and Lydekker 1889 A, p. 1388.
Osborn, H. F. 1881 A, p. 17.
1898 H, pp. 173, 215, 217, fig. 3.
Scott, W. B. 1886 A, p. 304.
Trouessart, E. L. 1898 A, p. 717. (Syn. of Uintatherium.)
Zittel, K. A. 1893 B, p. 447.

Bathyopsis fissidens Cope.

Cope, E. D. 1881 D, p. 182.
Cope, E. D. 1881 CC, p. 75.
1882 E, p. 176.
1884 O, p. 597, pl. xxixa, figs. 1-3; pl. lviiia, fig. 1.
1884 EE, pp. 1111, 1115, fig. 7.
1885 F, p. 53, fig. 35.
Marsh, O. C. 1884 F, p. 220, figs. 196, 197. (Uintatherium.)
Matthew, W. D. 1899 A, p. 36.
Roger, O. 1896 A, p. 158.
Trouessart, E. L. 1898 A, p. 718. (Uintatherium.)
Eocene (Wind River); Wyoming.

Suborder Dinocerea Marsh.

Marsh, O. C. 1872 S.
Unless otherwise indicated, the following authorities refer to this suborder under the amended form of the name *Dinocerata*.
Baur, G. 1890 C.
Brandt, J. F. 1878 A, p. 16.
Cope, E. D. 1873 E, p. 564.
1873 F, pp. 40, 42.
1873 J, p. 11.
1873 X.
1875 C, p. 28.
1875 M.
1877 K, p. 182.
1882 A, p. 445.
1884 E.
1884 O, pp. 510, 512, 559, 587.
1884 EE, p. 1111.
1885 F, p. 40.
1885 N.
1885 O.
1886 F.
1888 T.
1898 B, p. 125.
Filhol, H. 1884 A.
Flower, W. H. 1876 B, xiii, p. 308.
Gadow, H. 1898 A, p. 45. (Amblypoda, part.)
Garrod, A. H. 1873 A.
1873 B.
Gaudry, A. 1885 A.
Haeckel E. 1895 A, p. 542.
Hay, O. P. 1899 F, p. 682.
Hill, F. C. 1881 A.
L. P. B. 1885 A.
Lydekker, R. 1886 A, p. 179.
Marsh, O. C. 1873 B.
1873 F.
1873 G.
1873 I.
1873 J.
1873 K.
1873 L.
1873 M.
1873 P.
1874 A, p. 84.
1874 D.
1876 A.
1876 G, p. 60.
1884 F.
1885 B.
Nicholson and Lydekker 1889 A, p. 1387.
Osborn, H, F. 1893 D.
1898 H, pp. 177, 180.
1900 F, p. 89.
Osborn, Scott, and Speir 1878 A, p. 62.
Owen, R. 1876 A, p. 401.
Rütimeyer, L. 1888 A, p. 13.
Schlosser, M. 1888 A, p. 587.
1890 C, p. 250.
Science 1885 A, p. 488.
Scott, W. B. 1892 A, p. 439.
Steinmann and Döderlein 1890 A, p. 764.
Tomes, C. S. 1898 A, p. 440.
Zittel, K. A. 1893 B, p. 439. (Amblypoda, part.)

TINOCERIDÆ.

Marsh, O. C. 1872 M, p. 323.
Cope, E. D. 1873 E, pp. 563, 564. (Eobasilidæ.)
1873 F, p. 41. (Eobasilidæ.)
1873 K. (Eobasilidæ.)
1873 X, p. 292. (Eobasileidæ.)
1888 F, pp. 80, 86. (Uintatheriidæ.)
1889 R, p. 877. (Uintatheriidæ.)
Flower, W. H. 1876 B, xiii, p. 387. (Uintatheriidæ.)
1876 C, p. 114. (Uintatheriidæ.)
Haeckel E. 1895 A, p. 530. (Dinoceratida.)
Lydekker, R. 1886 A. p. 179. (Uintatheriidæ.)
1896 B. (Uintatheriidæ.)
Marsh, O. C. 1873 F, p. 295. (Tinoceratidæ.)
1884 F, p. 191. (Tinoceratidæ.)
Nicholson and Lydekker 1889 A, p. 1387. (Uintatheriidæ.)
Osborn, H. F. 1898 H, p. 182. (Uintatheriidæ.)
Roger, O. 1896 A, p. 156. (Dinoceratidæ.)
Trouessart, E. L. 1898 A, p. 715. (Uintatheriidæ.)
Zittel, K. A. 1893 B, p. 439. (Dinoceratidæ.)

Uintatherium Leidy. Type *U. robustum* Leidy.

Leidy, J. 1872 G, p. 169.
Cope, E. D. 1873 E, pp. 564, 580.
1873 F, p. 60.
1873 K.
1874 M.
1877 K, p. 186.
1882 H, p. 294.
1883 U.
1884 O, pp. 561, 587.
1884 EE, p. 1117.
1885 F, pp. 44, 53.
1885 N, p. 594 (Uintatherium; Ditetrodon, type *Uintatherium segne*.)
1888 F, p. 88, figure.
1889 C.
Flower, W. H. 1876 B, xiii, p. 387.
1876 C, p. 118.
Flower and Lydekker 1891 A, p. 436.
Leidy, J. 1872 A, p. 240. (Uintatherium, Uintamastix.)
1872 G, p. 169. (Uintamastix, type *U. atrox*.)
1872 H, p. 241.
1873 B, pp. 93, 331.
L. P. B. 1885 A.
Marsh, O. C. 1873 F.
1874 D.
1881 G.
1884 F, p. 191.
Nicholson and Lydekker 1889 A, p. 1388.
Osborn, H. F. 1881 A.
1890 D, p. 538.
1895 A, p. 82.
1897 G, pp. 252, 258.
1898 F, p. 91.
1898 H, p. 174.
1898 M, p. 587.

Osborn, Scott, and Speir 1878 A, p. 62.
Science 1885 A, p. 490.
Scott, W. B. 1891 B, pp. 375, 385.
Trouessart, E. L. 1898 A, p. 717.
Woodward, A. S. 1898 B, p. 299.
Zittel, K. A. 1893 B, p. 446.

Uintatherium alticeps Scott.

Scott, W. B. 1886 A, p. 307, fig. 4.
Matthew, W. D. 1899 A, p. 44.
Roger, O. 1896 A, p. 157. (Tinoceras.)
Eocene (Bridger); Wyoming.

Uintatherium latifrons Marsh.

Marsh, O. C. 1884 F, p. 220, figs. 11, 125–128.
1885 B, pp. 249, 262, fig. 48.
Matthew, W. D. 1899 A, p. 44.
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 718.
Eocene (Bridger); Wyoming.

Uintatherium leidianum Osb., Scott, and Speir.

Osborn, Scott, and Speir 1878 A, p. 68, pls. vi–viii.
Cope, E. D. 1884 O, pp. 593, 599, fig. 26.
1884 EE, p. 1117, fig. 10.
1885 F, p. 53, fig. 27.
Hill, F. C. 1881 A, p. 524.
Marsh, O. C. 1884 F, p. 221, fig. 198.
Matthew, W. D. 1899 A, p. 44.
Osborn, H. F. 1881 A, pp. 18, 19, 23, pl. ii.
Roger, O. 1896 A, p. 158.
Trouessart, E. L. 1898 A, p. 718.
Eocene (Bridger); Wyoming.

Uintatherium princeps Osb., Scott, and Speir.

Osborn, Scott, and Speir 1878 A, p. 81, pl. vii, fig. 2.
Cope, E. D. 1884 O, p. 593.
Marsh, O. C. 1884 F, p. 223.
Matthew, W. D. 1899 A, p. 44.
Eocene (Bridger); Wyoming.

Uintatherium robustum Leidy.

Leidy, J. 1872 G, p. 169.
Cope, E. D. 1873 E, pp. 581, 583.
1873 F, p. 64.
1873 K, p. 102.
1873 X, p. 291.
1882 H, p. 295.
1884 O, p 589, pl. xxxvi, figs. 1, 2.
1885 F, p. 53.
King, C. 1878 A, p. 403.
Leidy, J. 1872 A, p. 240. (U. robustum, Uintamastix atrox.)
1872 G, p. 169. (Uintamastix atrox, original description.)
1872 H, p. 241. (U. robustum, Uintamastix atrox.)
1873 B, pp. 96, 333, pl. xxv, figs. 6–12; pl. xxvi, figs. 1–3; pl. xxvii, figs. 30–34.
Marsh, O. C. 1872 S.
1873 B, p. 117.
1873 K, p. 147.
1873 L, p. 218.
1884 F, p. 219, figs. 61, 62, 195.
1885 B, fig. 98, 99.
Matthew, W. D. 1899 A, p. 43.
Osborn, Scott, and Speir 1878 A, p. 82.
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717.
Eocene (Bridger); Wyoming.

Uintatherium segne Marsh.

Marsh, O. C. 1884 F, p. 222, figs. 4, 42, 101, 102, 199, 200.
Cope, E. D. 1885 N, p. 594. (Ditetrodon.)
L. P. B. 1885 A, p. 186, fig. 16.
Marsh, O. C. 1885 B, figs. 78, 79.
Matthew, W. D. 1899 A, p. 44.
Roger, O. 1896 A, p. 158.
Trouessart, E. L. 1898 A, p. 718.
Eocene (Bridger); Wyoming.

Uintatherium sp. indet. Cope.

Cope, E. D. 1884 O, p. 593, pls. xxxiv, xxxv.
Eocene (Bridger); Wyoming.

DINOCERAS Marsh. Type *D. mirabilis* Marsh.

Marsh, O. C. 1872 R, p. 343.
Barbour, E. H. 1890 B, p. 395.
Cope, E. D. 1873 E, p. 580. (Syn. of Uintatherium.)
1877 S. (Syn. of Uintatherium.)
1884 O, p. 587. (Syn.? of Uintatherium.)
1885 F, pp. 44, 53. (Octotomus, type *D. laticeps*.)
1885 O.
Flower, W. H. 1876 B, xiii, p. 387.
Flower and Lydekker 1891 A, p. 437. (Syn. of Uintatherium.)
Garrod, A. H. 1873 A, p. 74.
Gaudry, A. 1878 B, p. 74.
1889 A.
L. P. B. 1885 A.
Leidy, J. 1873 B, pp. 95, 332. (Syn. of Uintatherium.)
Lydekker, R. 1886 A, p. 182.
Marsh, O. C. 1873 F.
1873 G.
1874 D.
1876 A, p. 162
1877 H.
1881 G.
1884 F, p. 200. (Paroceras, type *D. laticeps*.)
Nicholson and Lydekker 1889 A, p. 1388.
Osborn, H. F. 1898 M, p. 587.
Osborn, Scott, and Speir 1878 A, p. 62.
Owen, R. 1876 A, p. 401.
Trouessart, E. L. 1898 A, p. 715.
Wiedersheim, R. 1881 A, p. 363.
Woodward, A. S. 1898 B, p. 296.
Zittel, K. A. 1893 B, p. 446.

Dinoceras agreste Marsh.

Marsh, O. C. 1884 F, pp. 19, 197, fig. 15.
Matthew, W. D. 1899 A, p. 43.
Roger, O. 1896 A, p. 156.
Trouessart, E. L. 1898 A, p. 715.
Eocene (Bridger); Wyoming.

Dinoceras cuneum Marsh.

Marsh, O. C. 1884 F, pp. 77, 197, figs. 93, 94, 170, 171.
1885 B, figs. 118, 119.
Matthew, W. D. 1899 A, p. 43.
Roger, O. 1896 A, p. 156.
Trouessart, E. L. 1898 A, p. 715.
Eocene (Bridger); Wyoming.

Dinoceras distans Marsh.

Marsh, O. C. 1884 F, pp. 13, 15, 16, 29, 199, figs. 4, 8, 10, 31.
L. P. B. 1885 A, p. 181, fig. 8.
Marsh, O. C. 1885 B, figs. 41, 45, 47, 66.
Matthew, W. D. 1899 A, p. 43.
Roger, O. 1896 A, p. 156.
Eocene (Bridger); Wyoming.

Dinoceras laticeps Marsh.

Marsh, O. C. 1873 I, p. 301.
Cope, E. D. 1885 F, p. 53, fig. 34. (Octotomus.)
King, C. 1878 A, p. 403.
L. P. B. 1885 A, figs. 18, 23.
Marsh, O. C. 1876 A, p. 168, pl. v.
1884 F, p. 200, text figs. 14, 22, 27, 33, 47, 50, 57, 58, 112, 136, 138–140; pls. x–xiv, xliii. [Dinoceras (Paroceras).]
1885 B, figs. 51, 57, 62, 68, 71, 72, 84, 85, 87, 94, 95.
Matthew, W. D. 1899 A, p. 43.
Osborn and Speir 1879 A, p. 304. (Uintatherium.)
Roger, O. 1896 A, p. 156.
Trouessart, E. L. 1898 A, p. 715.
Eocene (Wyoming); Wyoming.

Dinoceras lucare Marsh.

Marsh, O. C. 1873 H, p. 408.
King, C. 1878 A, p. 403.
L. P. B. 1885 A, p. 176.
Leidy, J. 1873 B, p. 334.
Marsh, O. C. 1884 F, p. 200, pl. ix; text figs. 46, 103–110, 172, 173.
1885 B, figs. 83, 124, 125.
Matthew, W. D. 1899 A, p. 43.
Roger, O. 1896 A, p. 156.
Scott, W. B. 1886 A, p. 307.
Trouessart, E. L. 1898 A, p. 715.
Eocene (Wyoming); Wyoming.

Dinoceras mirabile Marsh.

Marsh, O. C. 1872 R.
Cope, E. D. 1873 D, p. 1. (Uintatherium.)
1873 E, pp. 581, 584. (Uintatherium.)
1873 F, p. 65. (Uintatherium.)
1873 X, p. 292. (Uintatherium.)
1874 B, p. 456. (Uintatherium.)
1884 O, p. 589. (Uintatherium.)
1885 F, p. 53, figs. 25, 26, 33. (Uintatherium.)
1889 C, p. 158, figure. (Uintatherium.)
Emerton, J. H. 1887 A.
King, C. 1878 A, p. 403.
L. P. B. 1885 A, with figures.
Leidy, J. 1872 H, p. 241. (Syn.? of Uintatherium robustum.)
1873 B, pp. 97, 108, 333. (Syn.? of U. robustum.)
Lydekker, R. 1886 A, p. 182.
Marsh, O. C. 1872 S.
1873 B, p. 118, pls. i, ii.
1873 K, pls. i, ii.
1873 L, p. 218.
1876 A, p. 165, pls. ii–iv.
1881 G, pl. ii.
1884 F, pls. i–vii, xx–xlii, xliv–lv; text figs. 3, 7, 13, 26, 34, 35, 39, 40, 43–45, 63, 89, 90, 91, 92, 95, 96, 99, 100, 106–109, 111, 113, 114, 118–123, 129–132, 143–146, 152, 153.
1885 B, figs. 38–40, 44, 50, 69, 70, 76, 80–82, 100, 116, 117, 120–123, 134–136.
Matthew, W. D. 1899 A, p. 43. (Uintatherium.)
Nature 1873 A.
1873 B.
Osborn, H. F. 1881 A, p. 24. (Uintatherium.)
1900 F, p. 93. (Uintatherium.)
Roger, O. 1896 A, p. 156.
Trouessart, E. L. 1898 A, p. 715.
Woodward, A. S. 1898 B, p. 296, fig. 169.
Zittel, K. A. 1893 B, p. 440, figs. 361, 362, 364–367.
Eocene (Bridger); Wyoming.

Dinoceras reflexum Marsh.

Marsh, O. C. 1884 F, p. 201, fig. 174.
Matthew, W. D. 1899 A, p. 43.
Roger, O. 1896 A, p. 156.
Trouessart, E. L. 1898 A, p. 715.
Eocene (Bridger); Wyoming.

TINOCERAS Marsh. Type *Titanotherium? anceps* Marsh.

Marsh, O. C. 1872 L, p. 322. (Issued in advance, Aug. 19.)
Barbour, E. H. 1890 B, p. 395.
Cope, E. D. 1872 S. p. 487. (Loxolophodon[1], in part.)
1872 T, p. 542. (Loxolophodon.)
1872 W. (Lefalophodon, error for Loxolophodon; issued Aug. 19.)
1872 II. (Loxolophodon.)
1873 E, pp. 564, 565. (Loxolophodon.)
1873 F, pp. 40–43. (Loxolophodon.)
1873 K. (Loxolophodon.)
1873 X, p. 293. (Loxolophodon.)
Cope, E. D. 1877 K, p. 148. (Loxolophodon.)
1879 Q. (Loxolophodon.)
1884 O, pp. 561, 569. (Loxolophodon.)
1885 F, p. 44. (Loxolophodon.)
1885 N. (Loxolophodon; Tetheopsis, type *Tinoceras stenops.*)
1886 F. (Tetheopsis.)
Filhol, H. 1884 A, pl. ix. (Loxolophodon.)
Flower and Lydekker 1891 A, p. 437. (Syn. of Uintatherium.)
Hill, F. C. 1881 A. (Loxolophodon.)
L. P. B. 1885 A.
Leidy, J. 1873 B, p. 332. (Syn. of Uintatherium.)

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[1] The generic title *Loxolophodon* was first employed by Professor Cope for *Bathmodon semicinctus*, now regarded as a species of *Coryphodon*. Later Professor Cope used the name for the genus here called *Tinoceras*. In this sense the type was *L. cornutus* (Cope, 1884 O, p. 572).

Lydekker, R. 1886 A, p. 180.
1893 E, p. 142. (Tinoceras, "miscalled.")
Marsh, O. C. 1872 G, p. 504.
1873 F, p. 295.
1873 G.
1873 J.
1873 L, p. 216.
1873 M.
1873 P, p. ii. ("Lefalophodon.")
1874 D.
1877 A, p. 81.
1881 G.
1884 F, p. 191.
1885 B.
Nicholson and Lydekker 1889 A, p. 1388.
Osborn, H. F. 1881 A, pls. iii, iv. (Loxolophodon.)
Osborn, Scott, and Speir 1878 A, p. 62.
Osborn and Speir 1879 A, p. 304, pl. ii. (Loxolophodon.)
Science 1885 A, p. 490.
Steinmann and Döderlein 1890 A, p. 765.
Trouessart, E. L. 1898 A, p. 716. (Loxolophodon.)
Woodward, A. S. 1898 B, p. 299.
Zittel, K. A. 1893 B, p. 446.

Tinoceras affine Marsh.

Marsh, O. C. 1884 F, p. 204, figs, 16, 178, 179.
Matthew, W. D. 1899 A, p. 43.
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 716. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras anceps Marsh.

Marsh, O. C. 1871 D, p. 35. (Titanotherium?.)
Cope, E. D. 1873 F, p. 41. (Titanotherium.)
1873 J. (Titanotherium.)
1884 O, p. 572.
King, C. 1878 A, p. 403.
Leidy, J. 1872 B, p. 365. (Titanotherium.)
1873 B, p. 334. (Uintatherium.)
Marsh, O. C. 1872 G, p. 123 (Mastodon anceps); p. 504 (Tinoceras).
1872 L.
1873 B, p. 117.
1873 H p. 408.
1873 K, p. 147.
1873 L, p. 218.
1873 N, p. 51.
1884 F, figs. 97, 98, 175–177.
Matthew, W. D. 1899 A, p. 43.
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 716. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras annectens Marsh.

Marsh, O. C. 1884 F, p. 205, figs. 6, 21, 36, 37.
L. P. B. 1885 A, fig. 4.
Marsh, O. C. 1885 B, figs. 43, 56, 73, 74.
Matthew, W. D. 1899 A, p. 43.
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 716. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras cornutum (Cope).

Cope, E. D. 1872 W. (Lefalophodon dicornutus, error for Loxolophodon cornutus.)
Barbour, E. H. 1890 B, p. 395, fig. 8.
Cope, E. D. 1872 S, p. 488. (Loxolophodon.)
1872 II. (Loxolophodon.)
1872 KK. (Eobasileus.)
1873 E, pp. 568, 575, pls. i-iv. (Loxolophodon.)
1873 F, pp. 45, 54. (Loxolophodon.)
1873 W, p. 151. (Eobasileus.)
1873 X, p. 298, pls. i, ii. (Loxolophodon.)
1873 Y, p. 49. (Eobasileus.)
1873 BB. (Loxolophodon.)
1884 O, pp. 573, 574, pls. xxxvii-xliii. (Loxolophodon.)
1885 F, p. 45, pl. i, text figs. 24, 29, 31, 32. (Loxolophodon.)
1885 O. (Loxolophodon.)
1887 S, p. 277, pl. viii. (Uintatherium.)
Leidy, J. 1873 B, p. 333. (Loxolophodon.)
Lydekker, R. 1886 A, p. 180.
Marsh, O. C. 1873 F, p. 294 (T. grande); p. 296 (T. cornutum).
1873 G.
1873 J. (T. grande.)
1873 L, p. 216 (T. cornutum); p. 217 (T. grande).
1873 M, p. 306. (T. cornutum, T. grande.)
1873 P, p. ii.
1884 F, p. 206, figs. 180, 181.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Nature 1873 C. (Loxolophodon.)
Osborn, H. F. 1896 C, p. 706, illus. 2. (Uintatherium.)
1898 Q, p. 17. (Uintatherium.)
1900 F, p. 90, fig. 2. (Uintatherium.)
Osborn and Speir 1879 A, p. 304, pl. i. (Loxolophodon.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 716. (Loxolophodon.)
Zittel, K. A. 1893 B, p. 447, fig. 368.
Eocene (Bridger); Wyoming.

Tinoceras crassifrons Marsh.

Marsh, O. C. 1884 F, p. 208, figs. 29, 182.
L. P. B. 1885 A, fig. 12.
Marsh, O. C. 1885 B, fig. 25.
Matthew, W. D. 1899 A, p. 43.
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 716. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras galeatum Cope.

Cope, E. D. 1873 D, p. 1. (Eobasileus.)
1874 B, p. 456, pl. i. (Eobasileus, Loxolophodon.)
1874 T. (Eobasileus.)
1884 O, pp. 573, 585, pls. xliii, xliv. (Loxolophodon.)
1885 F, p. 46.
Marsh, O. C. 1884, F, p. 209, figs. 183, 184.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Osborn, H. F. 1881 A, pp. 21, 22. (Loxolophodon.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 716. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras grande Marsh.

Marsh, O. C. 1872 M, p. 323.
Cope, E. D. 1873 E, p. 575. (Loxolophodon cornutus.)
1873 F, pp. 54, 61.

L. P. B. 1885 A, fis. 31, 32.
Marsh, O. C. 1873 F, p. 294.
1873 G.
1873 L, pp. 217, 218.
1884 F, p. 210, figs. 20, 49, 87, 88, 185.
1885 B, figs. 55, 86, 113–115.
Matthew, W. D. 1899 A, p. 44.
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 716. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras hians Marsh.

Marsh, O. C. 1884 F, p. 210, figs. 32, 186.
1885 B, fig. 67.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras ingens Marsh.

Marsh, O. C. 1884 F, p. 211, figs. 9, 17, 23, 25, 28, 51, 115–117, 124, 141, 142.
Barbour, E. H. 1890 B, p. 394, fig. 7.
Hutchison, H. N. 1893 A, p. 150, pl. xiv.
L. P. B. 1885 A, figs. 6. 10, 22.
Lydekker, R. 1886 A, p. 181, fig. 30.
Marsh, O. C. 1885 B, figs. 46, 52, 58, 63, 88, 96, 97, 126, 127, 137.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Osborn, H. F. 1900 F, p. 94. (Uintatherium.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras jugum Marsh.

Marsh, O. C. 1884 F, p. 212, fig. 187.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras lacustre Marsh.

Marsh, O. C. 1872 R, p. 344. (Dinoceras.)
Cope, E. D. 1873 E, pp. 581, 584. (Uintatherium.)
1873 F, pp. 61, 66. (Uintatherium.)
1884 O, pp. 589, 591, pl. xxxvi, figs. 3-8. (Uintatherium.)
1886 F. (Uintatherium.)
King, C. 1878 A, p. 403. (Dinoceras.)
Marsh, O. C. 1873 L, p. 218. (Dinoceras.)
1884 F, p. 212, fig 188.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras latum Marsh.

Marsh, O. C. 1884 F, p. 213, figs. 189, 190.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras longiceps Marsh.

Marsh, O. C. 1884 F, p. 214, figs. 38, 48, 191, 192.
1885 B, pp. 275, 279, figs. 75, 85.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras pugnax Marsh.

Marsh, O. C. 1884 F, p. 215, figs. 5, 18, 19, 24, 25, 29, 67.
L. P. B. 1885 A, fig. 9.
Marsh, O. C. 1885 B, figs. 42, 53, 54, 59, 64, 89, 104.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras speirianum Osb.

Osborn, H. F. 1881 A, p. 20, pl. i. (Loxolophodon.)
Cope, E. D. 1884 O, pp. 573, 599, fig. 28. (Loxolophodon.)
1885 F, p. 46, fig. 28.
Marsh, O. C. 1884 F, p. 216, fig. 193.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras stenops Marsh.

Marsh, O. C. 1884 F, p. 217, figs. 53, 54, 194.
Cope, E. D. 1885 N, p. 594. (Tetheopsis.)
1886 F, p. 155.
L. P. B. 1885 A, figs. 20, 21.
Lydekker, R. 1886 A, p. 179, fig. 28.
Marsh, O. C. 1885 B, figs. 90, 91.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717. (Loxolophodon.)
Eocene (Bridger); Wyoming.

Tinoceras vagans Marsh.

Marsh, O. C. 1884 F, p. 218, fig. 12.
1885 B, fig. 49.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Roger, O. 1896 A, p. 157.
Trouessart, E. L. 1898 A, p. 717. (Loxolophodon.)
Eocene (Bridger); Wyoming.

ELACHOCERAS Scott. Type *E. parvum* Scott.

Scott, W. B. 1886 A, p. 304.
Nicholson and Lydekker 1889 A, pp. 1384, 1388.
Zittel, K. A. 1893 B, p. 447.

Elachoceras parvum Scott.

Scott, W. B. 1886 A, p. 305, figs. 2, 3.
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Roger, O. 1896 A, p. 156.
Trouessart, E. L. 1898 A, p. 715.
Eocene (Bridger); Wyoming.

EOBASILEUS Cope. Type "*E. cornutus*" = *E. pressicornis*.

Cope, E. D. 1872 R, p. 485. (Aug. 20, 1872 as Palæont. Bull. No. 6.)
1872 S, p. 488. (Loxolophodon, in part.)
1872 W. (Lefalophodon, in part.)
1872 II. (Loxolophodon, in part.)
1873 E, pp. 564, 567, 575, 645.
1873 F, p. 54.
1873 J.
1873 K.
1873 W.
1873 Z.
1884 O, p. 561.
1885 F, pp. 44, 45.
Leidy, J. 1873 B, p. 332. (Syn. of Uintatherium.)
Marsh, O. C. 1873 B, pp. 118, 122.
1873 F.
1873 K, p. 151.
Nicholson and Lydekker 1889 A, p. 1388.
Science 1885 A, p. 490.
Trouessart, E. L. 1898 A, p. 718.
Zittel, K. A. 1893 B, pp. 446, 447.
A genus of doubtful validity; probably equivalent to *Tinoceras*.

Eobasileus furcatus Cope.

Cope, E. D. 1872 W. (Lefalophodon bifurcatus, error for Loxolophodon furcatus.)
1372 S, p. 488. (Loxolophodon.)
1872 II. (Loxolophodon.)
1872 KK, p. 774.
1873 E, p. 580.
1873 F, p. 59.
1873 W, p. 159. (Uintatherium.)
Cope, E. D. 1873 X, p. 291.
1884 O, p. 565 (Eobasileus); pls. xxxii xxxiii (Uintatherium).
1885 F, p. 45.
Marsh, O. C. 1873 B, p. 118.
1873 F, p. 295.
1873 K, p. 151.
1873 L, p. 217.
1884 F, p. 223. (Tinoceras.)
Matthew, W. D. 1899 A, p. 44. (Uintatherium.)
Trouessart, E. L. 1898 A, p. 718.
Eocene (Bridger); Wyoming.

Eobasileus pressicornis Cope.

Cope, E. D. 1872 W. (Lefalophodon excressicornis, error for Loxolophodon pressicornis.)
1872 R, p. 485. (E. cornutus, not Loxolophodon cornutus of Cope, E. D. 1872 W.)
1872 S, p. 488. (Loxolophodon.)
1872 II, p. 580. (Loxolophodon.)
1872 KK, p. 774.
1873 E, p. 575.
1873 F, p. 54.
1873 W, p. 159. (Uintatherium.)
1884 O, p. 562, pl. xxx, figs. 1-5; pl. xxxi.
Marsh, O. C. 1873 F, p. 295.
1873 L, p. 217.
1884 F, p. 223. (Tinoceras.)
Matthew, W. D. 1899 A, p. 44. (Uintatherium)
Roger, O, 1896 A, p. 158.
Troussart, E. L. 1898 A, p. 718.
Eocene (Bridger); Wyoming

Order PROBOSCIDEA.

Baur, G. 1889 K.
Cope, E. D. 1873 E, pp. 561-568.
1873 F, p. 38.
73 J, p. 11.
1874 M.
1880 B, p. 457.
1882 A, p. 444.
1882 Y.
1883 D.
1884 O, pp. 167, 378, 379.
1887 S, p. 342.
1888 D, p. 257.
1889 C, 142 *et seq.*
1889 J.
1889 R, pp. 875, 877.
Cope and Wortman 1884 A, p. 13.
Flower, W. H. 1876 B, xiii, p. 350.
1883 D, p. 423.
1885 A.
Flower and Lydekker 1891 A, p. 418.
Gadow, H. 1898 A, p. 45.
Gaudry, A. 1878 B, p. 169.
Gill, T. 1872 A, p. 301.
1872 B, pp. 13, 48, 89.
Gill and Coues 1877 A, p. 1087.
Grant, E. 1842 A, p. 769.
Gray, J. E. 1869 A, p. 358.
Haeckel, E. 1895 A, p. 538.
Hay, O. P. 1899 F, p. 682.
Lydekker, R. 1884 B, p. 16.
1886 B.
Lydekker, R. 1896 B.
Marsh, O. C. 1877 E.
1884 F, p. 172 *et seq.*
Nicholson and Lydekker 1889 A, p. 1390.
Osborn, H. F. 1890 D, p. 539.
1893 A.
1893 D.
1898 A, p. 146.
1900 C, p. 567.
1900 F, p. 89.
Owen, R. 1845 B, p. 613 ("Proboscidians".)
1848 A, p. 132.
1866 B, p. 437.
1868 A, p. 359.
Paulli, S. 1900 B, p. 235.
Roger, O. 1896 A, p. 158.
Ryder, J. A. 1878 A.
Schlosser, M. 1890 A.
1890 C.
1890 D.
Scott, W. B. 1892 A, p. 439.
Slade, D. D. 1893 A.
Steinmann and Döderlein 1890 A, p. 754
Thomas, O. 1890 A.
Tomes, C. S. 1898 A, p. 424.
Weithofer, K. A. 1888 B.
1890 A.
1893 A.
Woodward, A. S. 1898 B, p. 299.
Wortman, J. L. 1885 A, p. 297.
1886 A, p. 488.
Zittel, K. A. 1893 B, pp. 206, 447, 743.

ELEPHANTIDÆ.

Adams, A. L. 1877 B.
Blainville, H. M. D. 1864 A, iii, S, pls. i–xvii.
Brandt, J. F. 1869, p. 28.
Cope, E. D. 1873 E, p. 563.
1875 C, p. 25.
1889 J, p. 182.
1893 A.
Cuvier, G. 1799 A. ("Elephans.")
1806 A. ("Les elephans.")
1834 A, i, p. 463; ii, p. 1–373, pls. 1–29.
Edwards, A. M. 1865 A.
Falconer, H. 1868 A.
Flower, W. H. 1876 B, xiii, p. 351.
Flower and Lydekker 1891 A, p. 423.
Gadow, H. 1898 A, p. 46.
Gill and Coues 1877 A, p. 1037.
Gray, J. E. 1869 A, p. 358.
Lortet and Chantre 1879 A.
Lydekker, R. 1880 A, p. 197.
1884 B, p. 17.
1886 B, p. 13.
Naumann, E. 1879 A.
Nicholson and Lydekker 1889 A, p. 1394.
Roger, O. 1889 A.
1896 A, p. 158.
Scott, W. B. 1891 C, p. 66.
Sirodot, S. 1876 A.
1876 B.
Steinmann and Döderlein 1890 A, p. 757.
Thomas, O. 1890 A.
Trouessart, E. L. 1898 A, p. 700.
Weithofer, K. A. 1890 A.
1893 A.
Weyhe, —— 1875 A, p. 121.
Zittel, K. A. 1893 B, p. 458.

MAMMUT Blumenbach. Type *M. ohioticum* Blumenbach=*M. americanus* Kerr.

Blumenbach, J. F., 1799, Naturgeschichte, ed. vi, p. 698.

Unless otherwise indicated, the following writers refer to this genus under the name *Mastodon.*

Ameghino, F. 1889 A, p. 633.
Blumenbach, J. F. 1803, Naturgeschichte, ed. vii, p. 723. (Mammut.)
Brandt, J. F. 1869 A, p. 31.
Bronn, H. G. 1838 A, p. 1232 (Tetracaulodon); p. 1233 (Mastodon).
Burmeister, H. 1867 A, p. 287.
Cope, E. D. 1877 C, p. 584. (Cænobasileus, type *C. tremontigerus.*)
1884 G, p. 2. (Mastodon, Dibelodon, Tetrabelodon.)
1889 J, pp. 193, 204. (Dibelodon, Tetrabelodon.)
Cope and Wortman 1884 A, p. 31.
Cuvier, G. 1806 A. ("Mastodonte.")
1806 B, pp. 270–312.
1817, Règne Anim., p. 233.
1834 A, ii, pp. 247–273.
Falconer, H. 1857 B (Mastodon); p. 316 (Trilophodon, Tetralophodon.)
1865 A.
Falconer and Cautley 1846 A.
Flower, W. H. 1876 B, xiii, p. 351.
1883 D, p. 425.
Flower and Lydekker 1891 A, p. 431.
Gaudry, A. 1878 B, p. 170.
1891 B.
Gervais, P. 1855 A.
Godman, J. D. 1825 A.
1830 A. (Tetracaulodon.)
Grant, E. 1842 A, p. 771. (Mastodon, Tetracaulodon.)
Harlan, R. 1825 A, p. 209.
1834 B, p. 51. (Tetracaulodon.)
1835 B, p. 257. (Tetracaulodon.)
1842 B, p. 142 (Tetracaulodon); p. 143 (Hippopotamus).
1843 A, p. 210. (Tetracaulodon.)
Hays, I, 1834 A.
1842 A. (Tetracaulodon.)
Hays, I. 1842 B, p. 275. (Missourium, Tetracaulodon, Mastodon.)
1843 A.
1844 A. (Tetracaulodon.)
Horner, W. E. 1841 A.
1841 B. (Mastodon, Tetracaulodon.)
1841 C. (Tetracaulodon.)
Kaup, J. J. 1832 A. (Tetracaulodon.)
1843 A. (Tetracaulodon.)
Koch, A. C. 1839 B. (Missourian.)
1842 A, p. 714. (Tetracaulodon.)
1843 A. (Leviathan.)
1845 A. (Mastodon.)
Leidy, J. 1869 A, pp. 240, 392.
1871 C, p. 358.
1873 G, p. 416.
Lortet and Chantre 1879 A.
Lydekker, R. 1880 A, p. 202. (Mastodon, Trilophodon.)
1886 B, p. 14.
Marsh, O. C. 1877 E.
Meyer, H. 1867 B.
Nasmyth, A. 1842 A, p. 775. (Mastodon, Missourium, Tetracaulodon.)
Naumann, E. 1879 A.
Nicholson and Lydekker 1889 A, p. 1395.
Owen, R. 1842 E, p. 689.
1844 A, p. 219.
1845 B, p. 613.
Pavlow, M. 1894 A.
Pictet, F. J. 1853 A, p. 286.
Plummer, J. T. 1843 A.
Pohlig, H, 1892 B, p. 313.
Quenstedt, F. A. 1852 A, p. 53.
Richardson, J. 1854 B.
Scott, W. B. 1887 A.
1891 D, p. 90.
1892 A, p. 439.
Steinmann and Döderlein 1890 A, p. 758.
Thomas, O. 1890 A.
Trouessart, E. L. 1898 A, p. 700.
Warren, J. C. 1846 A.
1852 C.
Woodward, A. S. 1898 B, p. 303.
Woodward, H. 1894 A.
Zittel, K. A. 1893 B, p. 459.

Mammut americanum (Kerr).

Kerr, R. 1792, Anim. Kingdom, p. 116. (Elephas americanus.)

Unless otherwise indicated, the following writers call this species *Mastodon americanus.*

Agassiz, L. 1862 B. (M. giganteus.)
Allen, H. 1886 B.
Amer. Geologist 1891 C, p. 335. ("Mastodon.")
Amer. Jour. Science 1828 A, p. 187. ("Mastodon.")
  1835 A. ("Mastodon.")
  1846 A, p. 268. (Mastodon.)
  1846 B, p. 131, fig. 1. (M. giganteus.)
  1852 A. (M. giganteus.)
  1853 A. (M. giganteus.)
  1875 A, p. 222, (M. ohioticus.)
  1882 A, p. 294. ("Mastodon.")
Ami, H. M. 1898 A, p, 80.
Andrews, E. 1875 A, p. 32. ("Mastodon.")
Annan, R. 1793 A. (No name.)
Anonymous 1834 A. ("Mastodon.')
  1837 A. ("Mastodon.")
Atwater. C. 1820 A, p. 245, pl. ii, figs. A, B. ("Mastodon.")
Barton, B. S. 1805 A, ("Mammoth.")
Bell, R. 1898 A. (M. giganteus.)
Bensted, W. H. 1861 A. ("Missourium.")
Blainville, H. M. D. 1864 A, iii, S, 232, pls. xvi, xvii (M. ohioticus); iv, Z, p. 44 (Tapirus mastodontoideus).
Blake, W. P. 1855 A. (M. giganteus.)
  1868 A, p. 381. ("Mastodon.")
Blatchley, W. S. 1898 A, p. 90.
?Brevoort, J. C. 1859 A. ("Mastodon.")
Britton, N. L. 1885 A. ("Mastodon.")
Bronn, H. G. 1838 A, p. 1235, pl. xliv, fig. 6. (M. giganteus.)
Camper, P. 1788 A, pls. viii, ix. ("Mamonteum," not as generic name.)
Carpenter, W. M. 1838 A, p. 202. ("Mastodon.")
  1839 A. ("Mastodon.")
  1846 A, pp. 244, 249 ("Mastodon"); p 250 ("Dinotherium").
Chaloner, A. D. 1843 A. ("Mastodon.")
Chapman, E. J. 1858 A. (M. ohioticus?.)
Cheney, T. A. 1872 A. (M. giganteus.)
Christie, W. J. 1856 A. ("Mastodon.")
Claypole, E. W. 1895 B. ("Mastodon.")
Collett, J. 1882 A. (M. giganteus.)
Cooper, W. 1831 A, p. 160. (M. maximus.)
  1843 A, p. 33. (M. giganteum.)
Cooper, Smith, and De Kay 1831 A, p. 370. ("Mastodon.")
Cope, E. D. 1868 L, p. 251. (Tetracaulodon ohioticus, Trilophodon ohioticus.)
  1869 N, p. 740. (Trilophodon ohioticus.)
  1871 F. (Trilophodon ohioticus.)
  1871 I, p. 95.
  1874 J, p. 221. (M. ohioticus.)
  1875 F, p. 66. (M. ohioticus.)
  1875 V, p. 51. (Trilophodon ohioticus.)
  ?1877 C, p. 584. (Cænobasileus tremontigerus.)
  1882 O. (M. giganteus.)
  1884 G, pp. 5, 8.
  1884 V, p. 525. (M. ohioticus.)
  1885 S.
  1887 S, p. 56. (Trilophodon ohioticus.)
Cope, E. D. 1889 F, p. 164. (Mastodon.)
  1889 J, p. 206, text fig. 3, pl. xv, fig. 2.
  1899 A, p. 252. (Mastodon.)
Cope and Wortman 1884 A, p. 33, pl. iii, figs. 1, 2, pl. vi, fig. 1.
Couper, J. H. 1842 A, p. 216. ("Hippopotamus," "Mastodon.")
  1846 in Hodson, W. B. 1846 A, p. 31. (M. giganteus.)
Croom, H. B. 1835 A, p. 170. (M. giganteus.)
Cuvier, G. 1799 A, p. 19. (Animal de l'Ohio.)
  1806 A, p. 55. ("Mastodonte.")
  1806 B, pp. 270, 312, pls. xlix-lvi. ("Mastodonte.")
  1806 C, pls. lxvi-lxix. ("Mastodonte.")
  1834 A, ii, pp. 247-273, x, p. 477 (M. maximus); p. 478, pls. xix-xxv (M. americanus).
Daily State Journal 1870 A. ("Mastodon.")
Dana, J. D. 1875 A. (M. giganteus.)
  1879 A, p. 233.
Dawkins, W. B. 1870 A, p. 232. ("Mastodon.")
Dawson, J. W. 1868 A, figs. 23, 24. ("Mastodon.")
De Kay, J. E. 1824 A. (M. giganteus.)
  1842 C, p. 102. (M. giganteus.)
Depéret, C. 1887 A, p. 175. (M. ohioticus.)
Desor, E. 1849 A, p. 207. ("Mastodon.")
  1852 A, p. 58. ("Mastodon.")
Dickeson, M. W. 1846 A, p. 106. (M. giganteus.)
Domeier, W. 1803 A. ("Mammoth.")
Falconer, H. 1857 B. [M. (Trilophodon) ohioticus.]
  1868 A, i, p. 49, pl. vii, fig. 2. (M. ohioticus.)
Falconer and Cautley 1846 A, p. 16, pl. iii, fig. 9; pl. xl, fig. 16; pl. xliv, fig. 4. (M. ohioticus.)
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Foster, J. W. 1838 A, p. 79. (M. maximus.)
  1839 A, fig. 1. (M. giganteum.)
  1849 A. (M. giganteum.)
  1857 A. (M. giganteum.)
Gaudry, A. 1891 B, p. 4, pl. ii, fig. 7.
Gazley, S. 1830 A. ("Mastodon.")
Giebel, C. G. 1847 A, p. 197 (Tapirus mastodontoides); p. 202 (M. giganteum).
Gilbert, G. K. 1871 A, p. 220. ("Mastodon.")
Goddard, — 1841 A. ("Mastodon.")
Godman, J. D. 1825 A, pl. ii. (M. giganteus.)
  1828 A, p. 205, pls. opp. pp. 205, 225, 231, 233, 236. (M. giganteum.)
  1830 A, pls. xvii, xviii. (Tetracaulodon mastodontoideum.)
Gray, A. 1846 A. ("Mastodon.")
Hall, J. 1843 A, p. 363, plate, fig. No. 74; text fig. 173. (M. maximus.)
  1871 A, pls. iii-vii. (M. giganteus.)
Hallowell. E. 1847 A. ("Mastodon.")
Harlan, R 1825 A, p 211 (M. giganteus); p. 224 (Tapirus mastodontoides, M. tapiroides).
  1834 B, p. 47 (M. giganteum, M. maximus); pp. 57, 59 (Tapirus mastodontoides, M. tapiroides).
  1835 B, p. 254 (M. giganteum); p. 262 (M. tapiroides). p 265 (Tapirus mastodontoides).
  1842 E. (M. giganteus.)
  1843 A, p. 210. ("Mastodon")
Hartt, C. F. 1871 A. ("Mastodon)
Hayden, F. V. 1866 A. ("Mastodon.")

Hayes, S. 1895 A. ("Mastodon.")
Hays, I. 1834 A (M. giganteum); p. 334, pl. xxiv (M. cuvieri): p. 334, pl. xxv (M. jeffersonii); p. 334, pl. xxviii (M. collinsii); p. 334, pl. xxix (Tetracaulodon godmani).
1841 A, pp. 102, 106. ("Tetracaulodon," M. giganteum.)
1842 A, p. 183. (Tetracaulodon, M. giganteum.)
1842 B, p. 265. (M. giganteum, Tetracaulodon godmanii, T. tapiroides, T. kochii.)
1843 A, p. 46 ("Tetracaulodon"); p. 48 (M. giganteum.)
1846 A, p. 269. ("Tetracaulodon.")
Hazeltine, J. 1835 A. ("Mastodon.")
Hicks, L. E. 1873 A, p. 79. ("Mastodon.")
Hitchcock, E. 1872 A. ("Mastodon.")
1885 A. ("Mastodon.")
Hodson, W. B. 1846 A, p. 12. (M. giganteus.)
Holmes, F. S. 1849 A, p. 197. ("Dinotherium.")
1850 B, p. 203. ("Dinotherium," "Mastodon.")
1858 B, p. 442. ("Mastodon.")
Holmes, N. 1857 A. (M. giganteus.)
Horner, W. E. 1840 A, p. 281 (M. giganteum); p. 282 (Missourium kochii).
1841 A. ("Mastodon.")
1841 B, p. 308. ("Tetracaulodon.")
1842 A, p. 53. ("Mastodon.")
Horner and Hays 1842 A, pls. i-iv. ("Mastodon.")
Hoy, P. R. 1871 A, p. 147. (M. giganteus.)
Hunt. J. G. 1874 A. ("Mastodon.")
Hunter, W. 1769 A, pl. iv, figs. 1, 3, 5. ("Pseudelephant," "animal incognitum."
Hutchinson, H. N. 1893 A, p. 217, pl. xxi.
Jackson, J. B. S. 1845 A. (M. giganteus.)
Kaup, J. J. 1843 A, p. 172 (M. cuvieri, M. jeffersoni, M. giganteus); p. 173 (Tetracaulodon bucklandi, T. godmani); p. 174 (M. collinsii).
Kindle, E. M. 1898 A, p. 485.
Klippart, J. H. 1875 B. ("Mastodon.")
Koch, A. C. 1839 A. ("Mammoth.")
1839 B. ("Mastodon," "Missourian.")
1840 A. (Missourium kochii.)
1841, Description of the Missourian. (Leviathan missourii, Tetracaulodon tapyroides, T. osagei, T. kochii.)
1842 A, p. 715. (Tetracaulodon godmani, T. kochi, T. tapiroides.)
1843 A. (Leviathan missouriensis, Missourium theristocaulodon.)
1845 A. (Mastodon rugatum, Tetracaulodon godmani, T. haysii, T. kochii, Missourium theristocaulodon.)
1851 A. (M. giganteum.)
1857 A. (M. giganteum.)
1858 A. (M. giganteum.)
Lapham, I. A. 1855 A. (M. giganteus.)
Lathrop, S. P. 1851 A. ("Mastodon.")
Leidy, J. 1849 A, p. 182.
1858 D. ("Mastodon.")
1860 B, p. 106, pl. xix, figs. 1-3. (M. ohioticus.)
1868 A, p. 175.
1869 A, pp. 240, 392.
1870 M, p. 96.
1871 C, p. 358.
Leidy, J. 1871 D.
1871 F, p. 113.
1873 B, pp. 237, 255, 330, pl. xxii, figs. 5, 6; pl. xxviii, fig. 9.
1877 A, p. 213.
1884 A.
1884 B.
1889 B, p. 9.
Leidy and Lucas 1896 A, p. 16.
Lesley, J. P. 1889 A, p. 880.
Lockwood, S. 1883 A.
Lortet and Chantre 1879 A, p. 291.
Lydekker, R. 1886 B, p. 15, fig. 3.
Lyell, C. 1843 B. (M. giganteum.)
McCallie, S. W. 1892 A. ("Mastodon.")
Marsh, O. C. 1867 A. (M. ohioticus.)
1875 F. ("Mastodon.")
1877 E. ("Mastodon.")
1884 F, fig. 74.
1885 B, fig. 107.
1892 I, p. 350, pl. viii.
1893 E, pl. viii.
1897 C, pl. xxxi.
Maxwell, J. B. 1845 A. ("Mastodon.")
Miller, G. S. 1899 B, p. 373.
Mitchell, S. L. 1818 A, pl. vi, figs. 1-4; pl. viii, figs. 1-3. ("Mastodon.")
Moore, J. 1897 A, p. 277, plate.
Nasmyth, A. 1842 A, p. 776 (M. giganteum); p. 777 (Tetracaulodon godmani, T. kochii, T. tapiroides).
Newberry, J. S. 1870 A, p. 77. (M. giganteum.)
Nicholson and Lydekker 1889 A, p. 1397.
Osborn, H. F. 1898 Q, p. 19.
1899 G, p. 539. (Mastodon.)
Owen, R. 1842 E, p. 689. (M. giganteum.)
1845 B, p. 616, pl. cxliv, figs. 1-11, 13, 14. (M giganteus.)
1846 A, p. 94. (M. giganteus.)
1846 B, pp. 273, 290, fig. 102. (M. giganteus.)
1847 D. (M. giganteus.)
1860 E, p. 353. (M. ohioticus.)
1866 B, p. 441, fig. 297. (M. giganteus.)
Packard, A. S. 1868 A, p. 33. (M. giganteus.)
Panton, J. H. 1891 A. (M. giganteus.)
1892 A. (M. giganteus.)
Pavlow M. 1894 A, pl. i; pl. ii, fig. 2. (M. ohioticus.)
Peale, R. 1802 A. ("Mammoth.")
1802 B, pl. v, fig. 1. ("Mammoth.")
1803 C. ("Mammoth.")
Pictet, F. J. 1853 A, p. 302. (Tapirus mastodontoides.)
Prime, A. J. 1845 A, pl. iv. ("Mastodon.")
Putnam, F. W. 1884 A, p. 112. ("Mastodon.")
1885 A. ("Mastodon.")
Quart. Jour. Geol. Soc., 1845, i, p. 566. (M. giganteus.)
Quenstedt, F. A. 1852 A, p. 53, pl. iv, figs. 7, 8 (M. giganteum.)
1885 A, p. 73, pl. v, figs. 7, 8. (M. giganteum.)
Rice, F. P. 1885 A.
Richardson, J. 1854 A, p. 101 (Elephas rupertianus); p. 141 (M. rupertianus).
1854 B. (M. giganteus.)
1855 A, p. 131. (M. giganteus.)
Roger, O. 1896 A, p. 160.

Safely, R. 1866 A, p. 426, (“Mastodon.”)
Savage, J. 1878 A, p. 1011 (Mastodon ohioticus.)
Shaler, N. S. 1871 A, p. 162. (M. ohioticus.)
Shurtleff, N. B. 1846 A. (M. giganteus.)
Silliman, B., sr. 1835 A, p. 165. (“Mastodon.”)
Silliman, B., jr. 1868 A. (“Mastodon;” may be some other species.)
Smith, J. A. 1846 A, p. 19. (“Mastodon.”)
Steinmann and Döderlein 1890 A, p. 759.
Stewart, T. P. 1828 A.
Todd, A. 1876 A. (M. augustidens.)
Troost, G. 1835 A, pp. 139, 236. (“Mastodon.”)
Trouessart, E. L. 1898 A, p. 704.
Turner, G. 1799 A. (“Mastodon”, “Incognitum.”)
T. R. J. 1889 A. (“Mastodon.”)
Van Rensselaer, J. 1826 A. (M. giganteum.)
1827 A. (“Mastodon.”)
1828 A. (M. giganteum.)
Wailes, B. L. C. 1854 A, pp. 284, 286. (M. giganteus.)
Warren, J. C. 1846 A. (M. giganteus.)
1852 B. (M. giganteus.)
1852 C, pls. i-xxvi+i. (M. giganteus.)
1853 A, figs. 1-3. (M. giganteus.)
1855 A. (M. giganteus.)
1856 C. (M. giganteus.)
1856 A. (M. giganteus.)
Wheatley, C. M. 1871 A, p. 236.
Wheeler, W. 1878 A, p. 11 (“Mastodon.”)
Whipple, S. H. 1844 A. (“Mastodon.”)
Whitfield, R. P. 1891 A. (“Mastodon.”)
Whitney, J. D. 1879 A, p. 252.
Whittlesey, C. 1848 A, p. 215. (“Mastodon.”)
Wilder, B. G. 1871 A, p. 58. (“Mastodon.”)
Williston, S. W. 1897 I. p. 301.
1898 I, p. 91.
Winchell, A. 1864 A. (“Mastodon.”)
?Winslow, C. 1857 A. (M. giganteus.)
1868 A, p. 407. (“Mastodon.”)
Wistar, C. 1818 A. (“Mastodon.”)
Wizlizenius, A. 1858 A. (M. giganteus.)
Woolworth, S. 1847 A, p. 31, fig. 2. (“Mastodon.”)
Worthen, A. H. 1871 A. (“Mastodon.”)
Wyman, J. 1850 A, p. 57. (M. giganteus.)
1853 B. (“Mastodon.”)
1862 A, p. 422. (“Mastodon.”)
Yates, L. G. 1874 B.
Zittel, K. A. 1893 B, p. 464.

Pleistocene: Virginia, Ohio, Michigan, New Jersey, Connecticut, Massachusetts, Maryland, South Carolina, Texas, Kansas, Colorado, California, Tennessee, Illinois, Indiana, Pennsylvania, New York, Mississippi, Manitoba, Cape Breton Island, Ontario, etc.

Mammut brevidens (Cope).

Cope, E. D. 1889 J, pp. 199, 200, 201, fig. 5. (Tetrabelodon.)
1884 V, p. 525. (Mastodon proavus.)
1886 B, p. 359. (Mastodon proavus.)
1886 H. (Mastodon proavus.)
Matthew, W. D. 1899 A, p. 68. (Tetrabelodon.)
Roger, O. 1896 A, p. 160. (Mastodon.)
Scott, W. B. 1893 B, p. 659. (Mastodon proavus.)
1895 C, p. 179. (Mastodon proavus.)
Trouessart, E. L. 1898 A, p. 701. (Mastodon.)
Zittel, K. A. 1893 B, p. 465. [Mastodon (Trilophodon).]

Miocene (Loup Fork); Montana.

Mammut campestre (Cope).

Cope, E. D. 1878 C, p. 225. (Tetralophodon.)
1878 N, p. 128. (Mastodon.)
1884 G, p. 5. (Mastodon.)
1884 V, pp. 524, 526. (Mastodon.)
1889 J, pp. 195, 204, pls. ix, x. (Tetrabelodon.)
1893 A, p. 61. (Tetrabelodon.)
Lydekker, R. 1866 B, p. xi. (Mastodon.)
Matthew, W. D. 1899 A, p. 68. (Tetrabelodon.)
Roger, O. 1896 A, p. 160. (Mastodon.)
Trouessart, E. L. 1898 A, p. 702. (Mastodon.)
Zittel, K. A. 1893 B, p. 465. [Mastodon (Tetralophodon).]

Miocene (Loup Fork); Kansas, Nebraska.

Mammut chapmani (Cope).

Cope, E. D. 1874 J, p. 222. (Mastodon.)
1875 F, p. 73. (Mastodon.)
1877 K, pp. 314, 315. (Mastodon.)
Hays, I. 1834 A, explan. pl. xxii, figs. 3, 4. (No specific name.)
Leidy, J. 1869 A, pp. 248, 396. (Mastodon.)
Trouessart, E. L. 1898 A, p. 701. (Syn. of Mastodon obscurus.)

The origin of the specimen on which this species rests is unknown. It is not certainly known to be American.

Mammut euhypodon (Cope).

Cope, E. D. 1884 V, pp. 524, 525. (Mastodon.)
1884 G, p. 5. (Mastodon.)
1889 J, pp. 195, 202, pl. xiii, text fig. 7. (Tetrabelodon.)
Lydekker, R. 1886 B, p. xi. (Mastodon.)
Matthew, W. D. 1899 A, p. 68. (Tetrabelodon.)
Roger, O. 1896 A, p. 160.
Trouessart, E. L. 1898 A, p. 702. (Mastodon euhyphodon.)
Wagner, G. 1899 A, p. 103. (Syn.? of M. shepardi.)
Zittel, K. A. 1893 B, p. 465. (Mastodon euhyphodon.)

Miocene (Loup Fork); Kansas.

Mammut floridanum (Leidy).

Leidy, J. 1886 B, p. 11. (Mastodon.)
Cope, E. D. 1889 J, p. 205. (Tetrabelodon floridanus; syn.? of T. serridens.)
1892 AA. (Syn.? of Mastodon serridens.)
Leidy, J. 1886 C. (Mastodon.)
1887 A. (Mastodon.)
1890 C. (Mastodon.)
1892 A. (Mastodon.)
Leidy and Lucas 1892 A, pp. viii, 15, pls. i-vii (Mastodon.)
Trouessart, E. L. 1898 A, p. 702. (Mastodon.)
Wagner, G. 1899 A, p. 103. (Syn.? of Tetracaulodon shepardii.)
Zittel, K. A. 1893 B, p. 465. (Mastodon.)

Pliocene; Florida.

Mammut humboldii (Cuvier).

Cuvier G. 1825, Oss. Foss., ed. 2, vol. v, pt. ii, p. 527. (Mastodon.)

The specific name is usually spelled *humboldtii*. The original form is here adopted.

Ameghino, F. 1889 A, p. 645. (Mastodon.)
Blainville, H. M. D. 1864 A (1845), iii, pp. 249-285, 302. (Mastodon.)

Burmeister, H. 1867 A, p. 288, pl. xiv. (Mastodon.)
1889 A, p. 33. (Mastodon.)
Cope, E. D. 1884 G, pp. 5, 7. (Dibelodon.)
1884 V, p. 525. (Mastodon.)
1889 J, p. 195. (Dibelodon.)
1892 BB, p. 1059. (Dibelodon.)
1893 A, p. 60, pl. xvi, figs. 2–4; pl. xvii, fig. 4. (Dibelodon.)
Cuvier, G. 1806 C, p. 413. ("Mastodonte humboldien.")
1812, Oss. Foss., ed. 1, vol. ii, art. xi, p. 13. ("Mastodonte humboldien."
Gervais, P. 1855 A, p. 18, pl. v, figs. 9, 10. (M. humboldii.)
Gervais and Ameghino 1880 A, p. 109. (Mastodon.)
Lydekker R. 1886 B, p. 41, fig. 10. (Mastodon.)
Matthew, W. D. 1899 A, p. 75. (Dibelodon.)
Meyer, H. 1867 B, p. 64, pl. vi. (Mastodon.)
Roger, O. 1896 A, p. 161.
Trouessart, E. L. 1898 A, p. 704. (Mastodon.)
Wyman, J. 1855 C, p. 279, pl. xiii. (Mastodon.)
Zittel, K. A. 1893 B, p. 464. (Mastodon.)

Pliocene (Blanco); South America, Texas.

Mammut mirificum (Leidy).

Leidy, J. 1858 B. (Mastodon.)

The following authors refer to this species under the name *Mastodon mirificus.*

Cope, E. D. 1874 J, p. 222.
1877 K, p. 313.
1878 C, pp. 226, 227.
1884 V, p. 526.
1889 J, pp. 196, 206.
1892 G, p. 228.
1893 A, pp. 61, 62.
Hayden, F. V. 1858 B, p. 157.
King, C. 1878 A, p. 412.
Leidy, J. 1858 E, p. 28. [M. (Tetralophodon).]
1869 A, pp. 249, 396, pl. xxv, figs. 1, 2.
1870 J, p. 67.
1871 A, p. 64.
1871 C, p. 358.
1873 B, pp. 237, 330.
Lydekker, R. 1886 B, p. xi.
Matthew, W. D. 1899 A, p. 69. (Dibelodon.)
Roger, O. 1896 A, p. 160.
Trouessart, E. L. 1898 A, p. 705.
Zittel, K. A. 1893 B, p. 465.

Miocene (Loup Fork); Nebraska.

Mammut obscurum (Leidy).

Leidy, J. 1869 A, p. 396, pl. xxvii, figs. 13, 15?, 16?.

Unless otherwise indicated, the following writers call this species *Mastodon obscurus.*

Cope, E. D. 1872 DD.
1874 J, p. 221.
1875 V, p. 51.
1877 K, p. 315.
1880 S.
1884 V, p. 526.
1889 J, pp. 196, 200, 203. (Tetrabelodon.)
?Croom, H. B. 1835 A, p. 170. (M. angustidens.)
Dana, J. D. 1879 A, p. 233.
Emmons, E. 1858 B, p. 198, fig. 23. (M. giganteus.)
Gibbes, R. W. 1850 E. (M. angustidens.)
Harlan, R. 1842 B, p. 143. (M. longirostris.)
Leidy, J. 1858 D, p. 12. ("Mastodon.")
1870 M, p. 99.
1871 A, p. 64.
1871 C, p. 358.
1873 B, pp. 231, 330 (in part), pl. xxii, figs. 1–4.
Lydekker, R. 1884 B, p. 28.
1886 B, pp. x, 30.
Lyell, C. 1843 B, p. 128. (M. longirostris.)
1845 A, p. 427. (M. longirostris.)
Marsh, O. C. 1897 C, p. 527.
Roger, O. 1896 A, p. 160.
Trouessart, E. L. 1898 A, p. 701.
Warren, J. C. 1850 A. (M. angustidens.)
1852 A. (M. angustidens.)
1852 C, p. 78, pl. xxvi. (M. angustidens.)
Whitfield, R. P. 1888 A, p. 252.
Whitney, J. D. 1879 A, p. 252.
Zittel, K. A. 1893 B, p. 465.

Founded on a cast of a tooth said to have come from the Miocene of Maryland; also reported from North Carolina, South Carolina, Colorado (Pliohippus beds).

Mammut præcursor (Cope).

Cope, E. D. 1893 A, p. 64, pls. xviii, xix. (Dibelodon.)
1892 BB, p. 1059. (Mastodon præcursor; no description.)
1893 C, p. 203. (Mastodon.)
Matthew, W. D. 1899 A, pp. 69, 75. (Dibelodon.)
Roger, O. 1896 A, p. 160.
Trouessart, E. L. 1898 A, p. 702. (Mastodon.)

Miocene (Loup Fork); Texas. Pliocene (Blanco); Texas.

Mammut proavus (Cope).

Cope, E. D. 1873 CC, p. 10. (Mastodon.)

Unless otherwise indicated, the following writers call this species *Mastodon proavus.*

Cope, E. D. 1874 B, p. 531.
1874 J, p. 222.
1874 P, p. 22.
1884 G, p. 5. (M. angustidens.)
1884 V, p. 525. (M. angustidens var.)
1889 J, pp. 195, 202, pl. xi; text fig. 6. (Tetrabelodon angustidens proavus.)
1892 E, p. 253. ("M. angustidens type."
Lydekker, R. 1884 B, p. 17.
1886 B, p. x.
Matthew, W. D. 1899 A, p. 66. (Tetrabelodon angustidens.)
Roger, O. 1896 A, p. 160.
Scott, W. B. 1893 B, p. 659.
Trouessart, E. L. 1898 A, p. 702.
Zittel, K. A. 1893 B, p. 465.

Miocene (Loup Fork); Kansas, Nebraska, Colorado, New Mexico.

Mammut productum Cope.

Cope, E. D. 1874 J, p. 221. (Mastodon.)

Unless otherwise indicated, the following authors call this species *Mastodon productus.*

Amer. Jour. Science 1875 A, p. 222.
Cope, E. D. 1875 F, p. 72.
1877 K, pp. 24, 306, pls. lxx, lxxii.
1884 G, p. 5.
1884 V, p. 524.

Cope, E. D. 1889 J, pp. 195, 204. (Tetrabelodon.)
1893 A, p. 58.
1893 C, p. 203.
Leidy, J. 1873 B, pp. 235, 330 (in part), pl. xxii, figs. 1-4. (M. obscurus.)
Lydekker, R. 1886 B, p. x.
Matthew, W. D. 1899 A, p. 68. (Tetrabelodon.)
Roger, O. 1896 A, p. 160.
Trouessart, E. L. 1898 A, p. 702.
Zittel, K. A. 1893 B, p. 465.
Miocene (Loup Fork); New Mexico.

Mammut rugosidens Leidy.

Leidy, J. 1890 B. (Mastodon.)
Roger, O. 1896 A, p. 161. (Mastodon.)
Trouessart, E. L. 1898 A, p. 702. (Mastodon.)
Zittel, K. A. 1893 B, p. 465. (Mastodon.)
Upper Pliocene; South Carolina.

Mammut serridens (Cope).

Cope, E. D. 1884 V, pp. 524, 525, pl. iii, figs. 2, 3. (Mastodon.)
1884 G, pp. 5, 7. (Mastodon.)
1885 S. (Mastodon.)
1889 F, p. 164. (Mastodon.)
1889 J, pp. 200, 205, fig. 8. (Tetrabelodon.)
1892 AA. (Mastodon.)
1893 A, p. 18, pl. iii, figs. 2, 3. (Tetrabelodon serridens cimarronis.)
Leidy and Lucas 1896 A, p. 18. (Mastodon.)
Lydekker, R. 1886 B, p. x. (Mastodon.)
Matthew, W. D. 1899 A, p. 68. (Tetrabelodon.)
Roger, O. 1896 A, p. 160. (Mastodon.)
Trouessart, E. L. 1898 A, p. 702. (Mastodon.)
Zittel, K. A. 1893 B, p. 465. (Mastodon.)
Miocene (Loup Fork); Texas.

Mammut shepardi (Leidy).

Leidy, J. 1870 M, p. 98. (Mastodon.)
Bowers, S. 1889 A. (Mastodon.)
Cope, E. D. 1874 J, p. 222. (Mastodon.)
1884 G, p. 5. (Dibelodon.)
1884 V, pp. 524, 525. (Mastodon.)
1889 F. (Dibelodon.)
Cope, E. D. 1889 J, p. 204. (Dibelodon shepardi, D. tropicus.)
1892 E, p. 253. (Dibelodon.)
1892 G, p. 228. (Mastodon.)
1893 A, p. 57, pl. xv. (Tetrabelodon.)
1893 C. (Tetrabelodon.)
1893 P, p. 473, pl. xii. (Tetrabelodon.)
1893 Q, p. 812. (Tetrabelodon.)
Felix and Lenk 1891 A, p. 132, pl. xxx, fig. 1. (Mastodon.)
Leidy, J. 1871 A, p. 64. (Mastodon.)
1871 C, p. 358. (Mastodon.)
1871 J. (Mastodon.)
1872 K, p. 142. (M. obscurus.)
1873 B, pp. 231, 330 (in part), pl. xxi, figs. 1-4. (M. obscurus.)
Matthew, W. D. 1899 A, p. 75. (Tetrabelodon.)
Roger, O. 1896 A, p. 161. (Mastodon.)
Trouessart, E. L. 1898 A, p. 702. (Mastodon.)
Wagner, G. 1899 A, p. 99, pls. xxiv, xxv. (Tetracaulodon.)
Zittel, K. A. 1893 B, p. 465. (Mastodon.)
Pliocene (Blanco); California, Texas, Kansas, Mexico.

Mammut tropicum (Cope).

Cope, E. D. 1884 G, p. 7. (Dibelodon.)
1889 J. pp. 195, 198. (Dibelodon.)
1892 G, p. 227. (Mastodon successor.)
1892 J, p. 123. (Mastodon sp.)
1892 BB, p. 1059. (Dibelodon.)
1893 A, pp. 58, 59, 62, pl. xvi, fig. 1; pl. xvii, figs. 1-3. (Dibelodon.)
1893 C, p. 203. (Dibelodon.)
Felix and Lenk 1891 A, p. 133. (Mastodon.)
Lydekker, R. 1886 B, p. xi. (Mastodon.)
Matthew, W. D. 1899 A, p. 75. (Dibelodon.)
Meyer, H. 1867 B, p. 64, pl. vi. (Mastodon humboldtii.)
Roger, O. 1896 A, p. 161. (Mastodon successor.)
Trouessart, E. L. 1898 A, p. 703. (Mastodon.)
Zittel, K. A. 1893 B, p. 46. (Syn. of Mastodon humboldtii.)
Pliocene (Blanco); Texas, Mexico, South America.

ELEPHAS Linn. Type *E. maximus* Linn.

Linnæus, C. 1758 Syst. Nat., ed. 10, i, p. 33.
Adams, A. L. 1874 A.
1877 B.
1879 A.
1881 A.
Blainville, H. M. D. 1867 A, iii, S, plates.
Brandt, J. F. 1869 A, p. 34.
Cope, E. D. 1889 J, p. 194.
1893 M, p. 1015.
Cuvier, G. 1806 A.
1834 A, i, p. 455, ii, pp. 1-373.
Falconer, H. 1857 B. (Elephas, with subgenera Stegodon, Loxodon, and Euelephas.)
1865 A.
1868 A.
Falconer and Cautley, 1846 A.
Flower, W. H. 1876 B, xiii, p. 351.
1883 D, p. 425.
1885 A.
Flower and Lydekker, 1891 A, p. 424.
Gaudry, A. 1878 B, p. 175.
Grant, E. 1842 A, p. 771.
Gray, J. E. 1869 A, p. 359.
Leuthardt, F. 1891 A.
Lydekker, R. 1880 A, pp. 197, 256.
1886 B, p. 73.
Marsh, O. C. 1877 E.
Möbius, K. 1892 A.
Naumann, E. 1879 A.
Nicholson and Lydekker, 1889 A, p. 1401.
Owen, R. 1844 A, p. 208.
1845 B, p. 625.
1868 A, p. 360, figs. 289-292.
Paulli, S. 1900 A, p. 236.
Pictet, F. J. 1853 A, p. 280.
Pohlig. H. 1889 A.
1892 B.
Quenstedt, F. A. 1885 A, p. 67.
Röse, C. 1893 A.
Rütimeyer, L. 1888 A, p. 11.

Scott, W. B. 1887 A.
Steinmann and Döderlein 1890 A, p. 760.
Thomas, O. 1890 A.
Turner, H. N. 1848 A, p. 71.
Weber, M. 1898 A, p. 135.
Weithofer, K. A. 1890 A.
 1893 A.
Woodward, A. S. 1898 B, p. 305.
Zittel, K. A. 1893 B, p. 467.

Elephas columbi Falconer.

Falconer, H. 1857 B, p. 319. [E. (Euelephas).]
Bell, R. 1898 A, p. 371, fig. 1.
Blake, C. C. 1862 A, pl. iv. (E. texianus.)
 1862 B. (E. texianus.)
Briggs and Foster in Billings, E. 1863 A, figs. 1-5. (E. jacksoni.)
Cope, E. D. 1874 J, p. 221. (E. primigenius columbi.)
 1889 J, p. 209, pl. xiv. (E. primigenius columbi.)
 1894 A, p. 68. (E. primigenius var.)
Cragin, F. W. 1896 A, p. 53. (E. imperator?.)
Dall, W. H. 1891 A.
Dawkins, W. B. 1870 A, p. 232.
Donald, J. F. 1871 A. (E. primigenius var. jacksoni.)
Edwards, A. M. 1865 A.
Falconer, H. 1868 A, ii, p. 212, pl. x.
Felix and Lenk 1891 A, p. 131.
Gervais and Ameghino 1880 A, p. 213.
Hayden, F. V. 1858 B, p. 157.
?Kindle, E. M. 1898 A, p. 485. (E. americanus.)
Leidy, J. 1858 B, p. 10. (E. imperator.)
 1858 E, p. 29. [E. (Euelephas) imperator.]
 1869 A, p. 397. (E. americanus in part.)
 1870 M, p. 97.
 1871 C, p. 359. (E. americanus, part.)
 1873 B, pp. 238, 329. (E. americanus, part.)
 1873 G.
 1875 A, p. 121. (E. americanus, part.)
 1877 A, p. 213. (E. americanus.)
 1889 D, p. 17, pl. iii, figs. 8, 9. (E. americanus, or E. columbi.)
 1892 A, p. 129.
Logan, W. E. 1863 A, p. 914, figs. 495-498. (Euelephas jacksoni.)
Lucas, F. A. 1900 A, p. 349.
Lydekker, R. 1886 B, pp. xi, 171.
Mather, W. W. 1838 A, p. 362. (E. jacksoni.)
Miller, G. S. 1899 B, p. 373.
Nicholson and Lydekker 1889 A, p. 1406.
Owen, R. 1859, Rep. Brit. Assoc. Adv. Sci. for 1858, p. lxxxvi. (E. texianus, without description.)
Pohlig, H. 1887 A, p. 117. (E. trogontheri?, E. columbi.)
 1889 A, p. 247. (E. columbi, E. imperator.)
 1892 B, p. 327.
Trouessart, E. L. 1898 A, p. 711.
Zittel, K. A. 1893 B, p. 473.

Pleistocene; Georgia, South Carolina, Alabama, Texas, Colorado, Oregon, New Mexico, California, New York?, Florida, Mexico, Northwest Territory, Hudson Bay.

Elephas primigenius Blumenbach.

Blumenbach, J. F., 1803, Handb. Naturg., 1st French ed., vol. ii, p. 407. (*Fide* Lydekker.)
Adams, A. L. 1879 A.
 1881 A.
Agassiz, L. 1850 A, p. 100. ("Elephant.")
Amer. Geologist 1891 F.
Amer. Jour. Science 1853 B, p. 146.
Anonymous 1834 A. ("Elephant.")
 1837 A. ("Elephant.")
Baer, K. E. 1866 A.
 1867 A.
Barbour, E. H. 1890 A
Barton, B. S. 1805 A, p. 98. ("Elephant.")
Bell, R. 1898 A.
Beyer, S. W. 1899 A, p. 211.
Blainville, H. M. D. 1864 A, iii S, pls. iii, v, vi, viii, x.
Blake, W. P. 1855 A.
 1864 A. ("Elephas.")
 1867 B.
 1900 A, p. 257.
Blatchley, W. S. 1898 A, p. 89.
Brandt, J. F. 1848 A.
 1866 A.
 1866 B.
 1867 A.
Buckland, W. 1831 A, p. 594, pls. i, ii.
Carpenter, W. M. 1846 A, p. 249. ("Elephant")
Chaloner, A. D. 1843 A, p. 321. ("Elephant.")
Charlton, O. C. 1890 A.
Cooper, W. 1831 A, p. 168.
 1843, Proc. Geol. Soc. Lond., p. 33. ("Mammoth.")
Cooper, Smith, and De Kay 1831 A, p. 371. ("Elephant.")
Cope, E. D. 1884 G, p. 8.
 1888 B, p. 293.
 1889 F.
 1889 J, p. 207, pl. xvi, fig. 20.
 1889 S.
 1893 A, p. 87.
 1894 A, p. 68.
 1894 H, p. 453.
Cope and Wortman 1884 A, p. 32, pl. vi, figs. 2-5.
Cottle, T. 1852 A.
 1853 A.
Couper, J. H. 1842 A, p. 217. ("Mammoth.")
 1846 in Hodson, W. B. 1846 A, p. 45.
Cuvier, G. 1799 A, p. 15, pls. v, vi. ("Mammoth.")
 1806 A, pp. 45, 149, 264.
 1834 A, ii, pp. 1-246, with plates.
C. D. 1838 A.
Dall, W. H. 1869 A.
 1873 A.
Davison, C. 1894 A.
Dawkins, W. D. 1870 A, p. 233.
Dawson, G. M. 1894 A.
De Kay, J. G. 1842 C, p. 100 (E. primigenius); p. 101, pl. xxxii (E. americanus).
Diffenberger, F. R. 1873 A. (E. americanus.)
Dupont, E. 1867 A.
Duralde, M. 1804 A.
Edwards, A. M. 1865 A.
Edwards, T. 1793 A. (No name.)
Emmons, E. 1858 B, p. 200, fig. 24.
Falconer, H. 1857 B. [E. (Euelephas) primigenius.]
 1865 A.
Falconer and Cautley 1846 A, pl. i, fig. 1; pl. xiii. A, figs. 1-3; pl. xiii B, figs. 1-3.

Felix and Lenk 1891 A, pp. 126, 131.
Flower, W. H. 1876 B, xiii, 351.
1883 C.
Flower and Lydekker 1891 A, p. 428, figs. 184, 185.
Foster, J. W. 1838 A, p. 79. (E. primogenius.)
1839 A, p. 190, fig. 2. ("Elephant.")
1857 A.
1872 A, p. 143. (E. mississippiensis.)
Gaudry, A. 1872 A.
1873 A.
Gazley, S. 1830 A. ("Elephant.")
Geinitz, H. B. 1885 A, p. 66, pl. iii.
Gibbes, R. W. 1850 D.
Giebel, C. G. 1847 A, p. 206.
Godman, J. D. 1828 A, ii, pp. 255-265.
Harlan, R. 1823 A. ("Elephant.")
1825 A, p. 207.
1828 A, p. 189.
1834 B, p. 57.
1835 B, p. 263.
1835 G, p. 359. ("Elephant.")
1842 E.
Haymond, R. 1844 A, p. 294. ("Megatherium.")
Hays, I. 1844 A, p. 43. ("Elephant.")
Higley, W. K. 1866 A, plate.
Holmes, F. S. 1850 B, p. 203. ("Elephant.")
Horner, W. E. 1840 A, p. 299. ("Elephant."
Howorth, H. W. 1870 A.
1881 A.
1881 B.
1892 A.
1893 A.
1894 A.
Hutchinson, H. N. 1893 A, p. 193, pl. xx.
Kindle, E. M. 1898 A, p. 485.
Lambe, L. M. 1898 A, p. 136.
Landois —, 1871 A, p. 47, pl. ix.
Leidy, J. 1854 A, p. 9. (E. americanus.)
1860 B, p. 108, pl. xviii. (E. americanus.)
1869 A, pp. 251, 397. (E. primigenius, E. americanus.)
1870 K, p. 69. (E. americanus.)
1871 C, p. 359 (E. americanus.)
1875 A. (E. americanus, part.)
1877 A, p. 212. (E. americanus.)
1889 D, p. 17, pl. iii, figs. 6-9.
1889 E, p. 22.
Lucas, F. A. 1899 A, p. 764.
1900 A, p. 349, figures.
Lydekker, R. 1886 B, p. 175, figs. 30-32.
Lyell, C. 1843 C, p. 33. ("Elephant.")
Madison, ——. 1806 A, p. 486.
Marsh, O. C. 1877 E, p. 367. (E. americanus.)
Meyer, H. 1852 A, pl. xiv, figs. 1-4.
Mitchell, S. L. 1818 A, pl. vi, figs. 2, 3, 5, 6. ("Elephant.")
Möbius, K. 1892 A.
Nature 1871 A.
Naumann, E, 1879 A, pls. i-vii.
Newberry, J. G. 1870 A, p. 77. (E. primogenius.)
Newberry, J. G. 1871 A, p. 241. (E. americanus.)
Nicholson and Lydekker 1889 A, pp. 1404, 1406.
Owen, R. 1844 A, p. 210.
1845 B, p. 628, pl. cxlviii, figs. 5-8.
1846 B, p. 217, figs. 85, 86, 90-95.
1847 A.
Packard, A. S. 1868 A, p. 33. (E. americanus.)
1886 A.
Panton, J. H. 1891 A.
1892 A.
Parker, H. W. 1884 A.
Pictet, F. J. 1853 A, p. 283.
Pohlig, H. 1887 A, p. 117.
1887 B, p. 254.
1889 A, p. 248. (E. primigenius, E. americæ.)
1892 B, p. 327. (E. primigenius, E. americæ.)
Quenstedt, F. A. 1885 A, p. 68, pl. iv, figs. 11-19.
Richardson, J. 1854 A, p. 11 (Mastodon giganteus); p. 141 (E. primigenius).
1855 A, p. 132.
Rogers, H. D. 1854 A.
Schmidt, F. 1872 A.
Shaler, N. S. 1871 A, p. 148.
1871 B, p. 167.
Steinmann and Döderlein 1890 A, p. 761.
Steitz, A. 1870 A.
Stirrup, M. 1893 A.
1894 A.
Thompson, Z. 1850 A, p. 256. ("Elephant.")
1853 A, p. 14.
Toll, E. 1895 A. ("Mammoth.")
Troost, G. 1835 A, p. 143. (Elaphus primigenius)
Trouessart, E. L. 1898 A, p. 711.
Turner, G. 1799 A. ("Mammoth.")
Van Rensselaer, J. 1828 A, ("Elephant.")
Wailes, B. L. C. 1854 A, p. 286.
Warren, J. C. 1852 C. p. 142.
Weithofer, C. A. 1893 A.
Whitney, J. D. 1879 A, p. 254.
Williston, S. W. 1898 I, p. 91.
Winchell, A. 1863 A.
Winslow, C. F. 1857 A.
1868 A.
Wistar, C. 1818 A. ("Elephant.")
Woodhull, A. A. 1872 A.
Woodward, H. 1869 A.
Woolworth, S. 1847 A, p. 31, fig. 1. (E. americanus.)
Worthen, A. H. 1871 A.
Wylie, T. A. 1859 A.
Wyman, J. 1853 B.
1857 A. ("Elephant.")
Yates, L. G. 1874 B, p. 18.
Zittel, K. A. 1893 B, p. 469, figs. 387-390.

Pleistocene; New York, Vermont, New Jersey, Pennsylvania, Alaska, British Columbia, Ontario, Alberta, Mexico, Arizona, Montana, Colorado, Michigan, Kentucky, Ohio, Missouri, Illinois, Iowa, Indiana, Kansas, Georgia, North Carolina, South Carolina, Texas, Oklahoma, California, Oregon.

Order TILLODONTIA Marsh.

Marsh, O. C. 1875 C, p. 221.
Cope, E. D. 1875 C, p. 23.
1876 A, pp. 3, 4. (Tillodonta.)
1877 K, pp. 85, 370. (Tillodonta.)
1882 E, p. 146.
1882 L.
1883 I, p. 79.
1884 O, pp. 186, 194, 739. (Tillodonta.)
1887 S, p. 343.
1889 C, p. 144.
1891 L, p. 1117.
1891 N, p. 73.
1893 M, p. 1015.
1898 B, p. 115.
Flower, W. H. 1876 B, xiii, p. 514.
Flower and Lydekker 1891 A, p. 441.
Gadow, H. 1898 A, p. 42.
Haeckel, E. 1895 A, pp. 501, 502.
Hay, O. P. 1899 F, p. 682.
Lydekker, R. 1887 A, p. 1.
Lydecker, R. 1896 B, p. 378.
Marsh, O. C. 1876 B, p. 249.
1876 G, p. 60.
1877 E.
1892 D, p. 448.
1895 D, p. 498.
Nicholson and Lydekker 1889 A, p. 1408. (Tillodontia, Anchippodontia.)
Osborn, H. F. 1888 F.
1893 D.
1898 A, p. 146.
Osborn and Earle 1895 A, p. 40.
Roger, O. 1896 A, p. 88.
Schlosser, M. 1890 C, p. 250.
Steinmann and Döderlein 1890 A, p. 728.
Tomes, C. S. 1898 A, p. 446.
Woodward, A. S. 1898 B, p. 374.
Wortman, J. L. 1885 A, p. 298.
1897 B, p. 61.
Zittel, K. A. 1893 B, pp. 503, 725.

ESTHONYCHIDÆ.

Cope, E. D. 1889 R, p. 876.
Haeckel, E. 1895 A, p. 502. (Esthonychida.)
Matthew, W. D. 1899 A, p. 42.
Nicholson and Lydekker 1889 A, p. 1409. (Platychœropidæ.)
Roger, O. 1896 A, p. 88.
Steinmann and Döderlein 1890 A, p. 729.
Trouessart, E. L. 1898 A, p. 665. (Esthonycidæ.)
Zittel, K. A. 1893 B, p. 6.

ESTHONYX Cope. Type *E. bisulcatus* Cope.

Cope, E. D. 1874 O, p. 6.
1876 C.
1877 K, p. 153.
1882 E, p. 146.
1882 L.
1883 I, p. 77.
1884 O, pp. 194, 198, 202, 738.
1884 S, pp. 351, 479.
1885 T.
1885 X, p. 1208.
1888 I, p. 4.
1888 K, p. 163.
1889 C, p. 221.
Lydekker, R. 1885 D. (Syn. of Platychœrops.)
1887 A, p. 3.
Nicholson and Lydekker 1889 A, p. 1409.
Schlosser, M. 1890 C, p. 252.
Scott, W. B. 1892 D, p. 80.
Tomes, C. S, 1898 A, p. 446.
Woodward, A. S. 1898 B, p. 375.
Wortman, J. L. 1885 A, p. 299.
1886 A, p. 425.
1897 B, pp. 62, 63.
Zittel, K. A. 1893 B, p. 506.

Esthonyx acer Cope.

Cope, E. D. 1874 O, p. 7.
1875 C, p. 24. (Syn. of E. bisulcatus.)
1877 K, p. 154. (Syn. of E. bisulcatus.)
1882 E, p. 148.
1884 O, p. 204.
1884 S, p. 480.
Matthew, W. D. 1899 A, p. 31.
Roger, O. 1896 A, p. 88.
Trouessart, E. L. 1898 A, p. 665.
Eocene (Wasatch); New Mexico.

Esthonyx acutidens Cope.

Cope, E. D. 1881 D, p. 185.
1882 E, p. 148.
1884 O, pp. 204, 210, pl. xxiv*a*, figs. 17–21.
Matthew, W. D. 1899 A, p. 36.
Roger, O. 1896 A, p. 88.
Trouessart, E. L. 1898 A, p. 665.
Wortman, J. L. 1897 B, p. 62.
Eocene (Wind River); Wyoming.

Esthonyx bisulcatus Cope.

Cope, E. D. 1874 O, p. 6.
1875 C, p. 24.
1877 K, p. 154, pl. xl, figs. 27–33.
1884 O, p. 204.
King, C. 1878 A, p. 377.
Matthew, W. D. 1899 A, p. 31.
Roger, O. 1896 A, p. 88.
Trouessart, E. L. 1898 A, p. 665.
Eocene (Wasatch); New Mexico.

Esthonyx burmeisterii Cope.

Cope, E. D. 1874 O, p. 7.
1875 C, p. 24.
1877 K, p. 156, pl. xl, fig. 26.
1882 E, p. 147.
1884 O, p. 204, pl. xxiv*c*, figs. 1–10.

Cope, E. D. 1884 S, p. 479, fig. 23.
Lydekker, R. 1887 A, p. 3.
Matthew, W. D. 1899 A, p. 31.
Nicholson and Lydekker 1889 A, p. 1409, fig. 1290.
Roger, O. 1896 A, p. 88.
Trouessart, E. L. 1898 A, p. 665.
Woodward, A. S. 1898 B, p. 375, fig. 212.
Wortman, J. L. 1886 A, p. 425, fig. 207.
Zittel, K. A. 1893 B, p. 506, fig. 419.
Eocene (Wasatch); New Mexico, Wyoming.

Esthonyx spatularius Cope.

Cope, E. D. 1880 O, p. 908.
1881 D, p. 187.
1882 E, p. 148.
1884 O, pp. 204, 211, pl. xxiva, figs. 22-25.
1884 S, p. 479.
Matthew, W. D. 1899 A, pp. 31, 36.
Roger, O. 1896 A, p. 88.
Trouessart, E. L. 1898 A, p. 665.
Eocene (Wasatch, Wind River); Wyoming.

ANCHIPPODONTIDÆ.

Gill, T. 1872 B, p. 87.
Flower, W. H. 1876 C, p. 22. (Tillotheriidæ.)
Gadow, H. 1898 A, p. 42. (Tillotheriidæ.)
Haeckel, E. 1895 A, p. 502. (Tillotherida.)
Lydekker, R. 1887 A, p. 1. (Anchippodontidæ.)
1896 B, p. 378. (Anchippodontidæ.)
Marsh, O. C. 1875 C, p. 221. (Tillotheriidæ, Anchippodontidæ.)
Marsh, O. C. 1876 G, p. 60. (Tillotheriidæ.)
1877 E. (Tillotheriidæ.)
Nicholson and Lydekker 1889 A, p. 1408. (Anchippodontidæ.)
Roger, O. 1896 A, p. 88. (Tillotheriidæ.)
Steinmann and Döderlein 1890 A, p. 730. (Tillotheriidæ.)
Zittel, K. A. 1893 B, p. 506. (Tillotheriidæ.)

TILLOTHERIUM Marsh. Type *T. hyracoides* Marsh.

Marsh, O. C. 1873 H, p. 485.
Cope, E. D. 1882 E, p. 146.
1882 L.
1884 O, p. 195.
1888 I.
1888 L.
Flower, W. H. 1876 B, xiii, p. 514.
1876 C, p. 123.
Flower and Lydekker 1891 A, p. 441.
Lydekker, R. 1887 A, p. 1.
Marsh, O. C. 1875 B, p. 241.
1875 C.
1876 B, pls. viii, ix.
1876 G, p. 60.
1877 E.
1895 D, p. 498.
Nicholson and Lydekker 1889 A, p. 1408.
Osborn, H. F. 1897 G, p. 252.
Schlosser, M. 1890 C, p. 275.
1892 A, p. 226.
Steinmann and Döderlein 1890 A, p. 730.
Tomes, C. S. 1898 A, p. 416.
Woodward, A. S. 1898 B, p. 376.
Wortman, J. L. 1886 A, p. 433.
1897 B, pp. 61, 63.
Zittel, K. A. 1893 B, p. 507.

Tillotherium fodiens Marsh.

Marsh, O. C. 1875 B, p. 241.
Flower, W. H. 1876 C, p. 123, fig. 8.
Flower and Lydekker 1891 A, p. 441, fig. 198.
King, C. 1878 A, p. 404.
Lydekker, R. 1887 A, p. 2, fig. 2.
Marsh, O. C. 1876 B, p. 250, pl. viii; pl. ix, figs. 1-3; text fig. 1.
1895 D, p. 498, fig. 48.
Matthew, W. D. 1899 A, p. 42.
Nicholson and Lydekker 1889 A, p. 1408, fig. 1289.
Osborn, H. F. 1897 G, p. 257.
Roger, O. 1896 A, p. 88.
Trouessart, E. L. 1898 A, p. 666.
Woodward, A. S. 1898 B, p. 376, fig. 213.
Wortman, J. L. 1897 B, p. 63.
Zittel, K. A. 1893 B, p. 507, fig. 420.
Eocene (Bridger); Wyoming, Colorado.

Tillotherium hyracoides Marsh.

Marsh, O. C. 1873 H, p. 485.
King, C. 1878 A, p. 404.
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 88.
Trouessart, E. L. 1898 A, p. 666.
Eocene (Bridger); Wyoming.

Tillotherium latidens Marsh.

Marsh, O. C. 1874 C, p. 533.
1876 B, explan. pl. ix, fig. 4.
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 88.
Trouessart, E. L. 1898 A, p. 666.
Wortman, J. L. 1897 B, p. 63.
Zittel, K. A. 1893 B, p. 507, fig. 421.
Eocene (Bridger); Wyoming.

ANCHIPPODUS Leidy. Type *A. riparius* Leidy.

Leidy, J. 1868 I, p. 232
Cope, E. D. 1873 E, p. 605.
1873 G, p. 208.
1875 J, p. 3.
1876 A, p. 3.
1876 C.
1884 O, p. 195.
1888 I.
Flower, W. H. 1876 C, p. 122.
Flower and Lydekker 1891 A, p. 441.
Leidy, J. 1871 F, p. 114. (Trogosus, type *T. castoridens*.)
1872 B, p. 359. (Trogosus.)
1873 B, p. 328.
Lydekker, R. 1887 A, p. 1.
Marsh, O. C. 1874 B, p 255.
1875 B, p. 241.
1877 E.

Nicholson and Lydekker 1889 A, pp. 1408, 1410.
Wortman, J. L. 1897 B, p. 61.
Zittel, K. A. 1893 B, p. 508.

Anchippodus minor (Marsh).

Marsh, O. C. 1871 D, p. 36. (Palæosyops.)
Cope, E. D. 1873 E, p. 605.
Flower, W. H. 1876 B, xiii, p. 252.
King, C. 1878 A, p. 404.
Leidy, J. 1871 F, p. 114. (Trogosus castoridens.)
 1871 I. (Palæosyops minor.)
 1872 B, p. 360. (Trogosus castoridens.)
 1872 D, p. 37. (A. riparius.)
 1873 B, p. 71, pl. v, figs. 1–3. (Trogosus castoridens); p. 328 (A. riparius).
Lydekker, R. 1887 A, p. 2. (Syn. of A. riparius.)
Marsh, O. C. 1873 H, p. 485. (Anchippodus.)
 1876 B, p. 252, pl. ix, fig. 5. (Anchippodus.)
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 88 (Syn. of A. riparius); p. 192 (Palæosyops).
Trouessart, E. L. 1898 A, p. 666 (A. riparius, in part); p. 738 (Palæosyops minor, in part).
Wortman, J. L. 1897 B, p. 63. (Tillotherium.)
Zittel, K. A. 1893 B, p. 508, fig. 422.
 Eocene (Bridger); Wyoming.

Anchippodus riparius Leidy.

Leidy, J. 1868 I, p. 232.
Conrad, T. A. 1869 A, p. 363.
Cope, E. D. 1869 N, p. 740.
Flower, W. H. 1876 B, xiii, p. 514.
 1876 C, p. 120.
Leidy, J. 1869 A, p. 403, pl. xxx, figs. 45, 46.
 1872 D, p. 37.
 1873 B, pp. 72, 328, in part.
Lydekker, R. 1887 B, p. 2, in part.
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 88.
Trouessart, E. L. 1898 A, p. 666.
Zittel, K. A. 1893 B, p. 508.
 Eocene; New Jersey.

Anchippodus vetulus Leidy.

Leidy, J. 1871 K, p. 229. (Trogosus.)
 1872 B, p. 360. (Trogosus.)
 1873 B, p. 75 (Trogosus); p. 329, pl. vi, fig. 43. (Anchippodus).
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 88.
Trouessart, E. L. 1898 A, p. 666.
 Eocene (Bridger); Wyoming.

Order GLIRES Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 56. (Exclusive of Rhinoceros.)

Unless otherwise indicated, the following authors denominate this group *Rodentia.*

Adloff, P. 1898 A. ("Rodentien.")
Allen, J. A. 1877 A.
Alston, E. R. 1876 A. (Glires.)
Baird, S. F. 1857 A, p. 235.
Brandt, J. F. 1885 A.
Cope, E. D. 1874 B, p. 474.
 1880 B. 455.
 1881 E.
 1881 J, p. 545.
 1883 S.
 1884 O, pp. 166, 812.
 1887 S, p. 342.
 1888 D, p. 257.
 1888 I.
 1889 C, p. 143.
 1889 R, pp. 875, 876. (Glires.)
 1893 M, p. 1015.
 1898 B, p. 111. (Glires.)
Cope and Wortman 1884 A, p. 36.
Coues, E. 1877 B.
Cuvier, G. 1834 A, viii, pt. i, pp. 1–128, with plates.
Fleischmann, A. 1888 A.
Flower, W. H. 1883 A.
 1883 D, p. 415.
 1885 A.
Flower and Lydekker 1891 A, p. 443.
Gadow, H. 1898 A, p. 42.
Gill, T. 1872 A, p. 303. (Glires.)
 1872 B, p. 20. (Glires.)
Gill and Coues 1877 A, p. 1061.
Gruber, W. 1859 A. (Glires.)
Haeckel, E. 1895 A, p. 506.
Hay, O. P. 1899 F, p. 682. (Glires.)
Huxley, T. H. 1872 A, p. 369.
Leidy, J. 1871 C, p. 363.
Major, Fors. 1893 A, p. 202.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1411.
Osborn, H. F. 1900 C, p. 567.
Owen, R. 1845 B, p. 398.
 1851 C.
 1866 B, p. 364.
 1868 A, p. 294.
Palmer, T. S. 1897 A, p. 103.
Parker, W. K. 1868 A, p. 207.
 1885 A, p. 192.
Parsons, F. G. 1899 A.
 1900 A.
Paulli, S. 1900 B, p. 539.
Roger, O. 1896 A, p. 110.
Schlosser, M. 1884 A.
 1884 B.
 1888 A.
 1889 A.
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 1890 C.
 1890 D.
Scott, W. B. 1892 A, p. 426.
Slade, D. D. 1888 A, p. 243.
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 1892 B.
Smith J. 1895 A, p. 341.
Steinmann and Döderlein 1890 A, p. 731.
Thomas, O. 1896 A, p. 1012.
Tomes, C. S. 1898 A, p. 448.
Tomes, J. 1350 A, p. 529.
Trouessart, E. L. 1898 A, p. 388.
Tullberg, T. 1899 A.
Turner, H. N. 1848 A.
Weyhe, — 1875 A, p. 111.
Winge, H. 1888 A, p. 103.
Woodward, A. S. 1898 B, p. 373.
Woodward, M. F. 1894 A.
Wortman, J. L. 1886 A, p. 466.

Suborder SIMPLICIDENTATA.

Alston, E. R. 1876 A.
Flower and Lydekker 1891 A, p. 448.
Nicholson and Lydekker 1889 A, p. 1413.
Palmer, T. S. 1897 A.
Schlosser, M. 1884 A, p. 123. (Miodonta.)
Thomas, O. 1896 A, p. 1015.
Tullberg, T. 1899 A, pp. 57, 341.
Woodward, A. S. 1898 B, p. 377.

Superfamily SCIURÓMORPHA.

Alston, E. R. 1876 A.
Brandt, J. F. 1855 A.
Cope, E. D. 1881 E, p. 361.
    1883 S, p. 43.
    1884 O, p. 812.
Flower, W. H. 1883 D, p. 417.
Flower and Lydekker 1891 A, p. 448.
Gadow, H. 1898 A, p. 42.
Haeckel, E. 1895 A, p. 509.
Lydekker, R. 1896 B.
Nicholson and Lydekker 1889 A, p. 1419.
Palmer, T. S. 1897 A.
Schlosser, M. 1884 A, p. 98.
    1890 C, p. 250.
Slade, D. D. 1888 A, p. 243.
    1892 B.
Roger, O. 1896 A, p. 115.
Steinmann and Döderlein 1890 A, p. 732.
Thomas, O. 1896 A, p. 1015.
Tullberg, T. 1899 A, pp. 283, 461. (Sciuromorphi.)
Zittel, K. A. 1893 B, p. 521 (Protrogomorpha): p. 527 (Sciuromorpha).

SCIURIDÆ.

Allen, J. A. 1877 A, xi, p. 637.
Alston, E. R. 1876 A.
Baird, S. F. 1857 A, p. 240.
Brandt, J. F. 1855 A.
Cope, E. D. 1888 I, p. 9.
    1889 C, p. 267.
    1893 M, p. 1015.
Flower and Lydekker 1891 A, p. 450.
Leidy, J. 1871 C, p. 363.
Major, Fors. 1873 A.
    1893 A, p. 186.
Marsh, O. C. 1877 D, p. 253. (Allomyidæ.)
Nicholson and Lydekker 1889 A, p. 1420.
Roger, O. 1896 A, p. 115.
Schlosser, M. 1890 C, p. 250.
Steinmann and Döderlein 1890 A, p. 733.
Thomas, O. 1896 A, p. 1015.
Tomes, J. 1850 A, p. 536.
Trouessart, E. L. 1898 A, p. 395.
Tullberg, T. 1899 A, pp. 290, 468.
Winge, H. 1888 A, p. 135. (Including Sciurini, Castorini.)
Zittel, K. A. 1893 B, p. 528.

PTEROMYINÆ.

Major, Fors. 1893 A, p. 187.
Marsh, O. C. 1877 D, p. 253. (Allomyidæ.)
Trouessart, E. L. 1898 A, p. 395.
Winge, H. 1888 A, p. 115. (Allomyini.)

ALLOMYS Marsh. Type *A. nitens* Marsh.

Marsh, O. C. 1877 D, p. 253.
Cope, E. D. 1879 D, p. 67. (Meniscomys, type *M. hippodus.*)
    1881 E, p. 365. (Meniscomys.)
    1883 S, p. 51. (Meniscomys.)
    1884 O, p. 826. (Meniscomys.)
    1888 B, p. 291. (Meniscomys=Sciurodon, *fide* Schlosser.)
Hay, O. P. 1899 C, p. 253.
Major, Fors. 1893 A, p. 192.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1421. (Meniscomys.)
Riggs, E. S. 1899 A, p. 183. (Protogaulus, type *Meniscomys hippodus.*)
Schlosser, M. 1884 A, p. 136.
Winge, H. 1888 A, pp. 114, 164.
Zittel, K. A. 1893 B, p. 529.

Allomys cavatus (Cope).

Cope, E. D. 1881 E, p. 366. (Meniscomys.)
    1881 Q, p. 586. (Meniscomys.)
    1883 S, p. 52, fig. 7. (Meniscomys.)
Cope, E. D. 1884 O, pp. 827, 830, pl. lxiii, figs. 12-15 (Meniscomys.)
Major, Fors. 1893 A, p. 192.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 116.
Trouessart, E. L. 1898 A, p. 396.
    Miocene (John Day); Oregon.

Allomys hippodus (Cope).

Cope, E. D. 1879 D, p. 67. (Meniscomys.)
    1880 C, p. 55. (Meniscomys.)
    1881 E, p. 366. (Meniscomys.)
    1881 Q, p. 586. (Meniscomys.)
    1883 S, p. 52, fig. 6. (Meniscomys.)
    1884 O, pp. 827, 828, pl. lxii, figs. 7-10. (Meniscomys.)
Hay, O. P. 1899 C, p. 253.
Matthew, W. D. 1899 A, p. 62.
Riggs, E. S. 1899 A, p. 183, text figure, p. 185. (Protogaulus.)
Roger, O. 1896 A, p. 116.
Trouessart, E. L. 1898 A, p. 396.
    Miocene (John Day); Oregon.

Allomys liolophus (Cope).

Cope, E. D. 1881 E, p. 366. (Meniscomys.)
1881 Q, p. 586. (Meniscomys.)
1883 S, p. 52, fig. 58. (Meniscomys.)
1884 O, pp. 827, 829, pl. lxiii, fig. 11. (Meniscomys.)
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 116.
Trouessart, E. L. 1898 A, p. 396.
Miocene (John Day); Oregon.

Allomys multiplicatus (Cope).

Cope, E. D. 1879 B, p. 55. (Meniscomys.)
1879 D, p. 68. (Meniscomys.)
1883 S, p. 52, fig. 8. (Meniscomys.)
1884 O, pp. 827, 832. (Syn. of Meniscomys nitens.)
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 116.
Trouessart, E. L. 1898 A, p. 396.
Miocene (John Day); Oregon.

Allomys nitens Marsh.

Marsh, O. C. 1877 D, p. 253.
Cope, E. D. 1881 E, p. 366. (Meniscomys.)
1881 Q, p. 586. (Meniscomys.)
1883 S, p. 52, fig. 8. (Meniscomys.)
1884 O, pp. 827, 832, pl. lxiii, figs. 16, 17. (Meniscomys.)
King, C. 1878 A, p. 424.
Major, Fors. 1893 A, p. 193.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 116.
Trouessart, E. L. 1898 A, p. 396.
Zittel, K. A. 1893 B, p. 529, fig. 440.
Miocene (John Day); Oregon.

SCIURINÆ.

Baird, S. F. 1857 A, p. 240.
Major, Fors. 1893 A.
Thomas, O. 1896 A, p. 1015.
Trouessart, E. L. 1898 A, p. 403.
Winge, H. 1888 A, pp. 109, 190. (<Sciurini.)

Sciurus[1] Linn. Type *S. vulgaris* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 63.
Allen, J. A. 1877 A, xi, p. 666.
Baird, S. F. 1857 A, p. 243.
Cope, E. D. 1881 E, p. 363.
1883 S, p. 49.
1884 O, p. 816.
Flower and Lydekker 1891 A, p. 450.
Nicholson and Lydekker 1889 A, p. 1421.
Owen, R. 1868 A, p. 299.
Parker, W. K. 1868 A, p. 207, pl. xxv, figs. 12-15.
Tomes, J. 1850 A, p. 535.
Trouessart, E. L. 1898 A, p. 410.
Zittel, K. A. 1893 B, p. 329.

Sciurus ballovianus Cope.

Cope, E. D. 1881 C, p. 177.
1881 E, p. 363.
1881 Q.
1883 S, p. 50, fig. 4, *a-d*.
1884 O, p. 818, pl. lxiii, figs. 5, 6.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 117.
Trouessart, E. L. 1898 A, p. 425.
Miocene (John Day); Oregon.

Sciurus calycinus Cope.

Cope, E. D. 1871 I, p. 86.
Allen, J. A. 1877 A, xi, p. 931.
Cope, E. D. 1883 S, p. 373.
1899 A, p. 199.
Roger, O. 1896 A, p. 117.
Trouessart, E. L. 1898 A, p. 425.
Wheatly, C. M. 1871 B.
Pleistocene; Pennsylvania.

Sciurus panolius Cope.

Cope, E. D. 1869 E, p. 174, pl. iii, figs. 5, 5a.
Allen, J. A. 1877 A, xi, p. 932.
Cope, E. D. 1883 S, p. 373.
Leidy, J. 1869 A, p. 404.
Roger, O. 1896 A, p. 117.
Trouessart, E. L. 1898 A, p. 404.
Pleistocene; Virginia.

Sciurus relictus Cope.

Cope, E. D. 1873 CC, p. 3. (Paramys.)
Allen, J. A. 1877 A, xi, p. 932.
Cope, E. D. 1869 J, p. 3. (No description.)
1874 B, p. 475.
1881 E, p. 363.
1881 Q.
1883 S, p. 50, fig. 4, *e, f*.
1884 O, p. 817, pl. lxv, fig. 35.
Matthew, W. D. 1899 A, p. 52.
Roger, O. 1896 A, p. 117.
Trouessart, E. L. 1898 A, p. 425.
Oligocene (White River); Colorado.

Sciurus vortmani Cope.

Cope, E. D. 1879 E, p. 370.
1881 E, p. 363.
1881 Q.
1883 S, p. 50, fig. 4, *g, h*.
1884 O, p. 816, pl. lxiii, fig. 4.
Matthew, W. D. 1899 A, pp. 52, 62.
Trouessart, E. L. 1898 A, p. 155.
Miocene (John Day); Oregon, Colorado?.

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[1] Besides the species below recorded, Dr. Leidy has reported (1889 H, p. 5) *S. carolinensis* from a cave in Pennsylvania.

TAMIAS Illiger. Type *Sciurus striatus* Linn.

Illiger, 1811, Prod. Syst. Mamm., p. 83.
Allen, J. A. 1877 A, xi, p. 779.
Baird, S. F. 1857 A, p. 291.
Flower and Lydekker 1891 A, p. 452.
Nicholson and Lydekker 1889 A, p. 1421.
Tomes, J. 1850 A, p. 538.
Trouessart, E. L. 1898 A, p. 429.
Winge, H. 1888 A, p. 195.
Zittel, K. A. 1893 B, p. 530.

Tamias lævidens Cope.

Cope, E. D. 1869 E, p. 174, pl. iii, fig. 4.
Allen, J. A. 1877 A, xi, p. 932.
Cope, E. D. 1883 S, p. 373.
Leidy, J. 1869 A, p. 404.
Roger, O. 1896 A, p. 117.
Trouessart, E. L. 1898 A, p. 433.
Pleistocene; Virginia.

T. striatus has been reported by Dr. Leidy (1889 H, p. 5.) from a cave in Pennsylvania.

ADJIDAUMO Hay. Type *Gymnoptychus minutus* Cope.

Hay, O. P. 1899 C, p. 253.
Cope, E. D. 1874 B, p. 476. (Gymnoptychus; not of 1873, the type not the same.)
1881 E, p. 364. (Gymnoptychus.)
1883 S, p. 50. (Gymnoptychus.)
1884 O, p. 819. (Gymnoptychus.)
1888 B, p. 291. (Gymnoptychus.)
Nicholson and Lydekker 1889 A, p. 1421. (Gymnoptychus.)
Scott, W. B. 1895 E, p. 286. (Gymnoptychus.)
Tullberg, T. 1899 A, p. 480. (Gymnoptychus.)
Zittel, K. A. 1893 B, p. 532. (Gymnoptychus.)

Adjidaumo minutus (Cope.)

Cope, E. D. 1873 T, p. 6. (Gymnoptychus.)
Allen, J. A. 1877 B, p. 945. (Gymnoptychus minutus, G. nasutus.)
Cope, E. D. 1873 T, p. 6. (G. nasutus.)
1873 CC, p. 3. (G. nasutus, G. minutus.)
1874 B, p. 476. (G. nasutus, a syn. of G. trilophus.)
1881 E, p. 364. (Gymnoptychus.)
1881 Q. (Gymnoptychus.)
Cope, E. D. 1883 S, p. 51, fig. 5. (Gymnoptychus.)
1884 O, p. 822, pl. lxv, figs. 19-30. (Gymnoptychus.)
Hay, O. P. 1899 C, p. 253.
Matthew, W. D. 1899 A, p. 52. (Gymnoptychus.)
Roger, O. 1896 A, p. 119. (Gymnoptychus.)
Trouessart, E. L. 1898 A, p. 578. (Gymnoptychus.)
Oligocene (White River); Colorado.

Adjidaumo trilophus (Cope).

Cope, E. D. 1873 T, p. 6. (Gymnoptychus.)
Allen, J. A. 1877 B, p. 945. (Gymnoptychus.)
Cope, E. D. 1873 CC, p. 3. (Gymnoptychus.)
1874 B, p. 476. (Gymnoptychus.)
1881 E, p. 364. (Gymnoptychus.)
1881 Q. (Gymnoptychus.)
1883 S, p. 51, fig. 5. (Gymnoptychus.)
1884 O, p. 826, pl. lxv, figs. 31-34. (Gymnoptychus.)
Hay, O. P. 1899 C, p. 253.
Matthew, W. D. 1899 A, p. 52. (Gymnoptychus.)
Roger, O. 1896 A, p. 120. (Gymnoptychus.)
Oligocene (White River); Colorado.

ARCTOMYS Schreber. Type not designated.

Schreber, J. C., 1780, Säugeth., iv, p. 721.
Allen, J. A. 1877 A, xi, p. 909.
Alston, E. R. 1876 A.
Baird, S. F. 1857 A, p. 338.
Blainville, H. M. D. 1864 A, iv, EE, p. 11, plate.
Cope, E. D. 1869 E, p. 172. (Stereodectes, type *S. tortus*.)
1869 J, p. 3. (Stereodectes.)
Flower and Lydekker 1891 A, p. 454.
Giebel, C. G. 1859 A.
Nicholson and Lydekker 1889 A, p. 1420.
Owen, R. 1866 B, p. 382.
Palmer, T. S. 1897 A.
Parker, W. K. 1868 A, p. 207, pl. xxiv, figs. 14-16.
Tomes, J. 1850 A, p. 538.
Zittel, K. A. 1893 B, p. 529.

Arctomys monax (Linn).

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 60. (Mus.)
Allen, J. A. 1877 A, xi, p. 911.
Baird, S. F. 1857 A, p. 359, pl. xlix, fig. 1.
Cope, E. D. 1869 E, p. 173.
1883 S, p. 373.
Flower and Lydekker 1891 A, p. 450, fig. 198.
Giebel, C. G. 1859 A.
Leidy, J. 1862 A, p. 423.
1869 A, p. 404.
1889 H, p. 5.
Trouessart, E. L. 1898 A, p. 445.
Zittel, K. A. 1893 B, p. 529, fig. 439.
Recent; United States to Hudson Bay: Pleistocene; Illinois, Virginia.

Arctomys tortus (Cope).

Cope, E. D. 1869 E, p. 172, pl. iii, figs. 3, 3a. (Stereodectes.)
1869 J. (Stereodectes.)
Leidy, J. 1869 A, pp. 404, 446.
Trouessart, E. L. 1898 A, p. 445. (A. monax.)
Pleistocene; Virginia.

Arctomys vetus Marsh.

Marsh, O. C. 1871 E, p. 121.
Allen, J. A. 1877 A, xi, p. 933.
King, C. 1878 A, p. 430.
Matthew, W. D. 1899 A, p. 66.
Roger, O. 1896 A, p. 116.
Trouessart, E. L. 1898 A, p. 445.
Miocene (Loup Fork); Nebraska.

MYLAGAULIDÆ.

Cope, E. D. 1881 Q, p. 586.
1881 E, p. 373.
Matthew, W. D. 1899 A, p. 66.
Riggs, E. S. 1899 A, p. 181.

MYLAGAULUS Cope. Type *M. sesquipedalis* Cope.

Cope, E. D. 1878 H, p. 384.
1881 E, p. 373.
1883 S, p. 56.
Nicholson and Lydekker 1889 A, p. 1415.
Riggs, E. S. 1899 A, p. 181.
Zittel, K. A. 1893 B, p. 531.
Roger, O. 1896 A, p. 119.
Trouessart, E. L. 1898 A, p. 448.
Miocene (Loup Fork); Nebraska, Colorado.

Mylagaulus monodon Cope.

Cope, E. D. 1881 E, p. 374.
1881 Q, p. 586.
1883 S, p. 56, fig. 12.
Matthew, W. D. 1899 A, p. 66.
Riggs, E. S. 1899 A, p. 184.

Mylagaulus sesquipedalis Cope.

Cope, E. D. 1878 H, p. 384.
1881 E, p. 375.
1881 Q, p. 586.
1883 S, p. 56, fig. 12.
Matthew, W. D. 1899 A, p. 66.
Roger, O. 1896 A, p. 119.
Trouessart, E. L. 1898 A, p. 448.
Miocene (Loup Fork); Nebraska.

MESOGAULUS Riggs. Type *M. ballensis* Riggs.

Riggs, E. S. 1899 A, p. 181.

Mesogaulus ballensis Riggs.

Riggs, E. S. 1899 A, p. 181, text figures.
Miocene (Deep River); Montana.

CASTORIDÆ.

Allen, J. A. 1877 A, p. 431,
Alston, E. R. 1876 A, p. 78.
Baird, S. F. 1857 A, p. 350. (Castorinæ.)
Brandt, J. F. 1855 A.
Flower and Lydekker 1891 A, p. 457.
Leidy, J. 1871 C, p. 363.
Merriam, J. C. 1896 A, p. 364.
Nicholson and Lydekker 1889 A, p. 1419.
Roger, O. 1896 A, p. 118.
Steinmann and Döderlein 1890 A, p. 733.
Thomas, O. 1896 A, p. 1015.
Trouessart, E. L. 1898 A, p. 447.
Tullberg, T. 1899 A, pp. 306, 472.
Winge, H. 1888 A, p. 137. (Castorini.)
Zittel, K. A. 1893 B, p. 528.

CASTOR Linn. Type *C. fiber* Linn.

Linnæus, C., 1858, Syst. Nat., ed. 10, i, p. 58.
Allen, J. A. 1877 A, p. 432.
Baird, S. F. 1857 A, p. 355.
Blainville, H. M. D. 1864 A, iv, EE, p. 13, pls. i, ii.
Brandt, J. F. 1855 A.
Cope, E. D. 1881 E, p. 368.
1884 O, p. 838.
1888 I, p. 10.
Flower, W. H. 1885 A.
Flower and Lydekker 1891 A, p. 457.
Nicholson and Lydekker 1889 A, p. 1419.
Owen, R. 1866 B, pp. 364, 374, figs. 230, 240.
Pictet, F. J. 1853 A, p. 250.
Tomes, J. 1850 A, p. 739.
Trouessart, E. L. 1898 A, p. 447.
Wyman, J. 1850 D.
Zittel, K. A. 1893 B, p. 531.

Castor canadensis Kuhl.

Kuhl, H., 1820, Beiträge zur Zool., p. 64.
Allen, J. A. 1877 A, p. 433. (C. fiber.)
Baird, S. F. 1857 A, p. 355, pl. xlviii, fig. 1.
Brandt, J. F. 1855 A, p. 64, pls. i–iii. (C. americanus.)
Cope, E. D. 1869 E, p. 173. (C. fiber.)
1878 H, p. 389. (C. fiber.)
1881 E, p. 370. (C. fiber.)
1884 O, p. 839. (C. fiber.)
1889 F, p. 160. (C. fiber.)
1889 S, p. 980. (C. fiber.)
1899 A, p. 200. (C. fiber.)
Leidy, J. 1860 B, p. 111, pl. xxi, figs. 1, 2.
1869 A, p. 405.
1889 H, p. 5, pl. i, fig. 8. (C. fiber.)
Logan, W. E. 1863 A, p. 914.
Lydekker, R. 1885 B, p. 263.
Roger, O. 1896 A, p. 119.
Trouessart, E. L. 1898 A, p. 447.
Wyman, J. 1850 A, p. 61, fig. 4. (C. fiber americanus.)
Recent; North America. Pleistocene; New York, Pennsylvania, Virginia, Tennessee, New Jersey, South Carolina, Oregon, Ontario, Canada.

EUCASTOR Leidy. Type *E. tortus* Leidy.

Leidy, J. 1858 E, p. 23. (Subgenus of Castor.)
Allen, J. A. 1877 A, p. 449.
Cope, E. D. 1881 E, p. 369.
1883 S, p. 55.
1884 O, p. 839.
Flower and Lydekker 1891 A, p. 458.
Nicholson and Lydekker 1889 A, p. 1419.
Zittel, K. A. 1893 B, p. 531.

Eucastor tortus Leidy.

Leidy, J. 1858 E, p. 23. [Castor (Eucastor).]
Allen, J. A. 1877 A, p. 449.
Cope, E. D. 1881 E, p. 369.
1881 Q, p. 586.
1883 S, p. 55.
Hayden, F. V. 1858 B, p. 158.
Leidy, J. 1869 A, pp. 341, 406, pl. xxvi, figs. 21, 22. (Castor.)
1871 C, p. 363. (Castor.)
Matthew, W. D. 1899 A, p. 66.
Merriam, J. C. 1896 A.
Roger, O. 1896 A, p. 119.
Trouessart, E. L. 1898 A, p. 448.
Miocene (Loup Fork); Nebraska.

STENEOFIBER E. Geoffroy. Type not indicated.

Geoffroy, E., 1833, Revue Encyclop.
Cope, E. D. 1877 K, p. 297.
1881 E, p. 369.
1884 O, p. 838. (Syn. of Castor.)
Flower and Lydekker 1891 A, p. 458. (Chalicomys, Palæocastor.)
Leidy, J. 1869 A, p. 306. (Palæocastor, type *Steneofiber nebrascensis*.)
1871 C, p. 363. (Palæocastor.)
Nicholson and Lydekker 1889 A, p. 1420. (Chalicomys, Palæocastor.)
Pictet, F. J. 1853 A, p. 252.
Pomel, A. 1847 C, p. 381.
1853 A, p. 20.
Schlosser, M. 1884 A, p. 21.
Scott, W. B. 1895 C, p. 76.
Tullberg, T. 1899 A, p. 474.
Zittel, K. A. 1893 B, p. 530.

Steneofiber gradatus Cope.

Cope, E. D. 1879 D, p. 63.
1879 B, p. 55.
1881 E, p. 370. (Castor.)
1881 Q, p. 586. (Castor.)
1883 S, p. 55. (Castor.)
1884 O, pp. 839, 844, pl. lxiii, fig. 22. (Castor.)
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 118.
Trouessart, E. L. 1898 A, p. 449.
Miocene (John Day); Oregon.

Steneofiber montanus Scott.

Scott, W. B. 1893 B, p. 680.
Matthew, W. D. 1899 A, p. 52.
Roger, O. 1896 A, p. 119.
Scott, W. B. 1895 C, p. 76.
Trouessart, E. L. 1898 A, p. 450.
Oligocene (White River); Montana.

Steneofiber nebrascensis Leidy.

Leidy, J. 1856 I, p. 89.
Allen, J. A. 1877 A, p. 451.
Cope, E. D. 1877 K, pp. 297, 300.
1881 E, p. 370. (Castor.)
1881 Q, p. 586. (Castor.)
1883 S, p. 55. (Castor.)
1884 O, p. 839. (Castor.)
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 412. (Palæocastor.)
Leidy, J. 1857 D, p. 176. (Chalicomys.)
1869 A, pp. 338, 406, pl. xxvi, figs. 7–11. (Palæocastor.)
1871 C, p. 363. (Palæocastor.)
Matthew, W. D. 1899 A, p. 52.
Roger, O. 1896 A, p. 118.
Trouessart, E. L. 1898 A, p. 449.
Oligocene (White River); South Dakota, Nebraska, North Dakota.

Steneofiber pansus Cope.

Cope, E. D. 1874 J, p. 222.
Allen, J. A. 1877 A, p. 453.
Cope, E. D. 1875 F, p. 73.
1877 K, p. 297, pl. lxix, figs. 4–14.
1881 E, p. 370.
1881 K. (Castor.)
1883 S, p. 55, fig. 11. (Castor.)
1884 O, pp. 839, 840. (Castor.)
Matthew, W. D. 1899 A, p. 66.
Roger, O. 1896 A, p. 118.
Trouessart, E. L. 1898 A, p. 449.
Miocene (Loup Fork); New Mexico, Nebraska.

Steneofiber peninsulatus (Cope).

Cope, E. D. 1881 E, p. 370. (Castor.)
1879 B, p. 55. (Steneofiber nebrascensis?.)
1881 Q, p. 586. (Castor.)
1883 S, p. 55, figs. 9, 10. (Castor.)
1884 O, p. 840, pl. lxiii, figs. 18–21. (Castor.)
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 118.
Trouessart, E. L. 1898 A, p. 449.
Miocene (John Day); Oregon.

SIGMOGOMPHIUS Merriam. Type *S. lecontei* Merriam.

Merriam, J. C. 1896 A.

Sigmogomphius lecontei Merriam.

Merriam, J. C. 1896 A, figs. 1, 2.
Matthew, W. D. 1899 A, p. 66.
Trouessart, E. L. 1898 A, p. 450.
Pliocene; California.

ISCHYROMYIDÆ.

Alston, E. R. 1876 A, p. 78.
Allen, J. A. 1877 B, p. 944.
Cope, E. D. 1881 E, p. 868.
1884 O, pp. 37, 834 (Protomyidæ); p. 835 (Ischyromyidæ).
Nicholson and Lydekker 1889 A, p. 1420.
Roger, O. 1896 A, p. 110.
Trouessart, E. L. 1898 A, p. 451.
Tullberg, T. 1899 A, p. 463.
Winge, H. 1888 A, p. 114.
Zittel, K. A. 1893 B, p. 521.

PARAMYS Leidy. Based on three species, *P. delicatus, delicatior, delicatissimus.*

Leidy, J. 871 L, p. 231.
As the species here included in *Paramys* have, by Cope and others, been referred to the genus *Plesiarctomys*, citations are given to the literature of the latter genus also.
Allen, J. A. 1877 A, xi, p. 933 (Paramys); p. 935 (Sciuravus).
1877 B, p. 946. (Pseudotomus.)
Alston, E. R. 1876 A, p. 78. (Pseudotomus.)
Cope, E. D. 1872 N, p. 467. (Pseudotomus, type *P. hians.*)
1873 E, p. 610. (Pseudotomus.)
1877 K, p. 170. (Plesiarctomys.)
1883 S, p. 45. (Plesiarctomys.)
1884 O, p. 175. (Plesiarctomys.)
Flower and Lydekker 1891 A, p. 457. (Plesiarctomys.)
Leidy, J. 1871 L, p. 230 (Sciuravus); p. 231 (Paramys).
1872 B, p. 357.
1873 B, pp. 109, 335 (Paramys); p. 113 (Sciuravus).
Major, Fors. 1893 A, p. 202. (Plesiarctomys.)
Marsh, O. C. 1871 E, p. 122. (Sciuravus, type *S. nitidus.*)
1878 G, p. 246. (Sciuravus.)
Matthew, W. D. 1897 C, p. 266. (Plesiarctomys.)
Nicholson and Lydekker 1889 A, p. 1420. (Plesiarctomys, Paramys.)
Osborn, H. F. 1895 A, p. 81.
Osborn, Scott, and Speir 1878 A, p. 83.
Scott, W. B. 1890 A, p. 474. (Plesiarctomys.)
1892 A, p. 426.
Trouessart, E. L. 1898 A, p. 451.
Winge, H. 1888 A, pp. 114, 164.
Zittel, K. A. 1893 B, p. 521 (Paramys); p. 528 (Plesiarctomys.)

Paramys buccatus (Cope).

Cope, E. D. 1877 K, p. 171, pl. lxiv, fig. 8. (Plesiarctomys.)
1881 D, p. 184. (Plesiarctomys.)
1882 E, p. 146. (Plesiarctomys.)
1883 S, p. 47. (Plesiarctomys.)
1884 O, p. 179, pl. xliv*a*, fig. 14. (Plesiarctomys.)
Matthew, W. D. 1899 A, p. 30, 39.
Roger, O. 1896 A, p. 110.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Wasatch); New Mexico, Wyoming: (Bridger); Wyoming.

Paramys delicatior Leidy.

Leidy, J. 1871 L, p. 231.
Allen, J. A. 1877 A, xi, p. 934.
Cope, E. D. 1873 E, p. 610.
1873 U, p. 4.
1877 K, p. 172, pl. xliv, figs. 10, 11. (Plesiarctomys.)
1881 D, p. 184. (Plesiarctomys.)
1882 E, p. 146. (Plesiarctomys.)
1883 S, p. 47. (Plesiarctomys.)
1884 O, p. 182, pl. xxiv*a*, figs. 11–13. (Plesiarctomys.)
Leidy, J. 1872 B, p. 357.
1873 B, pp. 110, 335, pl. vi, figs. 26, 27; pl. xxvii, figs. 16–18.
Matthew, W. D. 1899 A, pp. 30, 35, 38.
Osborn, H. F. 1897 G, p. 256. (Plesiarctomys delicatior?.)
Roger, O. 1896 A, p. 110.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Wind River, Bridger); Wyoming (Wasatch); New Mexico, Wyoming.

Paramys delicatissimus Leidy.

Leidy, J. 1871 L, p. 231.
Allen, J. A. 1877 A, xi, p. 935.
Cope, E. D. 1873 E, p. 610.
1873 U, p. 4.
1877 K, p. 172, pl. xxiv, figs. 9, 12. (Plesiarctomys.)
1881 D, p. 184. (Plesiarctomys.)
1883 S, p. 47, figs. 1, 2. (Plesiarctomys.)
1884 O, p. 179, pl. xxiv*a*, figs. 1–10. (Plesiarctomys.)
Leidy, J. 1872 B, p. 357.
1873 B, pp. 111. 335, pl. vi, figs. 28, 29.
Matthew, W. D. 1899 A, pp. 30, 34, 39.
Roger, O. 1896 A, p. 110.
Trouessart, E. L. 1898 A, p. 451.
Zittel, K. A. 1893 B, p. 522, fig. 430.
Eocene (Bridger); Wyoming: (Wasatch?); New Mexico, Wyoming,

Parymys delicatus Leidy.

Leidy, J. 1871 L, p. 231.
Allen, J. A. 1877 A, xi, p. 934.
Cope, E. D. 1873 E, p. 610.
1873 U, p. 4.
King, C. 1878 A, p. 404.
Leidy, J. 1872 B, p. 357.
1873 B, pp. 110, 335, pl. vi, figs. 23–25.
Matthew, W. D. 1899 A, p. 38.
Roger, O. 1896 A, p. 110.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Bridger); Wyoming.

Paramys hians (Cope.)

Cope, E. D. 1872 N, p. 467. (Pseudotomus.)
Allen, J. A. 1877 B, p. 946. Pseudotomus.)

Cope, E. D. 1873 E, p. 611. (Pseudotomus.)
1883 S, p. 47. (Plesiarctomys.)
1884 O, p. 183, pl. xxiv, figs. 3-5. (Plesiarctomys.
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 110.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Bridger); Wyoming.

Paramys leptodus Cope.

Cope, E. D. 1873 U, p. 3.
Allen, J. A. 1877 A, xi, p. 934.
Cope, E. D. 1873 E, p. 609.
1883 S, p. 47. (Plesiarctomys.)
1884 O, p. 183, pl. xxiv, fig. 1. (Plesiarctomys.)
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Bridger); Wyoming.

Paramys nitidus (Marsh.)

Marsh, O. C. 1871 E, p. 122. (Sciuravus.)
Allen, J. A. 1877 A, xi, p. 935.
King, C. 1878 A, p. 404.
Leidy, J. 1872 B, p. 358. (Sciuravus.)
1873 B, p. 113. (Sciuravus.)
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Bridger); Wyoming.

Paramys parvidens (Marsh).

Marsh, O. C. 1872 I, p. 220. (Sciuravus.)
Allen, J. A. 1877 A, xi, p. 936. (Sciuravus.)
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Bridger); Wyoming.

Paramys robustus Marsh.

Marsh, O. C. 1872 I, p. 218.
Allen, J. A. 1877 A, xi, p. 934.
Matthew, W. D. 1899 A, p. 39.
Osborn, H. F. 1895 A, p. 81.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Bridger); Wyoming.

Paramys sciuroides (Scott and Osb.).

Scott and Osborn 1887 A, p. 256. (Plesiarctomys.)
Major, Fors. 1893 A, p. 202. (Plesiarctomys.)
Matthew, W. D. 1899 A, p. 49.
Scott and Osborn 1890 A, p. 475, pl. xi, figs. 1, 2; text fig. 1. (Plesiarctomys.)
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 451.
Zittel, K. A. 1893 B, p. 522, fig. 429.
Eocene (Uinta); Utah.

Paramys superbus Osb., Scott, and Speir.

Osborn, Scott, and Speir 1878 A, p. 84.
Eocene (Bridger); Wyoming.

Paramys uintensis Osborn.

Osborn, H. F. 1895 A, p. 81.
Matthew, W. D. 1899 A, p. 49.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Uinta); Utah.

Paramys undans (Marsh).

Marsh, O. C. 1871 E, p. 122. (Sciuravus.)
Allen, J. A. 1877 A, xi, p. 965. (Sciuravus.)
Cope, E. D. 1873 E, p. 610.
1873 U, p. 4.
1883 S, p. 47. (Plesiarctomys.)
Leidy, J. 1872 B, p. 358. (Sciuravus.)
1873 B, p. 113. (Sciuravus.)
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Bridger); Wyoming.

Paramys sp. indet.

Leidy, J. 1873 B, pp. 113, 335, pl. vi, fig. 30. (Sciuravus.)
Allen, J. A. 1877 A, xi, p, 936.
Eocene (Bridger); Wyoming.

TILLOMYS Marsh. Type *T. senex* Marsh.

Marsh, O. C. 1872 I, p. 219.
Allen, J. A. 1877 A, xi, p. 938.
Nicholson and Lydekker 1889 A, p. 1420. (=? Ischyromys.)
Schlosser, M. 1884 A, p. 130. (=? Ischyromys.)
Zittel, K. A. 1893 B, p. 522.

Tillomys parvus Marsh.

Marsh, O. C. 1872 I, p. 219.
Allen, J. A. 1877 A, xi, p. 939.
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Bridger); Wyoming

Tillomys senex Marsh.

Marsh, O. C. 1872 I, p. 219.
Allen, J. A. 1877 A, xi, p. 938.
King, C. 1878 A, p. 404.
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 451.
Eocene (Bridger); Wyoming

TAXYMYS Marsh. Type *T. lucaris* Marsh.

Marsh, O. C. 1872 I, p. 219.
Allen, J. A. 1877 A, xi, p. 938.
Marsh, O. C. 1880 H, p. 10. (Tachymys.)
Zittel, K. A. 1893 B, p. 522. (Toxymys.)

Taxymys lucaris Marsh.

Marsh, O. C. 1872 I, p. 219.
Allen, J. A. 1877 A, xi, p. 938.
King, C. 1878 A, p. 404.
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 452.
Eocene (Bridger); Wyoming.

COLONYMYS Marsh. Type *C. celer* Marsh.

Marsh, O. C. 1872 I, p. 220.
Allen, J. A. 1877 A, xi, p. 938.
Marsh, O. C. 1878 G, p. 246.
Matthew, W. D. 1899 A, p. 39. (Colonomys.)
Nicholson and Lydekker 1889 A, p. 1419.
Zittel, K. A. 1893 B, p. 522.

Colonymys celer Marsh.

Marsh, O. C. 1872 I, p. 220.
Allen, J. A. 1877 A, xi, p. 938.
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 452.
Eocene (Green River); Wyoming.

APATEMYS Marsh. Type *A. bellus* Marsh.

Marsh, O. C. 1872 I, p. 221.
1877 E.
A genus of uncertain position.

Apatemys bellulus Marsh.

Marsh, O. C. 1872 I, p. 221.
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 89.
Trouessart, E. L. 1898 A, p. 669.
Eocene (Bridger); Wyoming.

Apatemys bellus Marsh.

Marsh, O. C. 1872 I, p. 221.
King, C. 1878 A, p. 404.
Matthew, W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 89.
Trouessart, E. L. 1898 A, p. 669.
Eocene (Bridger); Wyoming.

ISCHYROMYS Leidy. Type *I. typus* Leidy.

Leidy, J. 1856 I, p. 89.
Allen, J. A. 1877 B, p. 944 (Ischyromys); p. 945 (Gymnoptychus).
Cope, E. D. 1873 S, p. 1. (Colotaxis, type *C. cristatus*=I. typus.)
1873 T, p. 5. (Gymnoptychus, type *G. chrysodon*=I. typus.)
1874 B, p. 477.
1881 E, p. 366.
1883 S, p. 47.
1884 O, p. 833.
1888 B, p. 291. (=Sciuromys, *fide* Schlosser.)
Hay, O. P. 1899 C, p. 253.
Leidy, J. 1871 C, p. 363.
Nicholson and Lydekker 1889 A, p. 1420.
Schlosser, M. 1884 A, p. 130.
Trouessart, E. L. 1898 A, p. 452.
Tullberg, T. 1899 A, p. 464.
Winge, H. 1888 A, pp. 115, 164.
Zittel, K. A. 1893 B, p. 522.

Ischyromys typus Leidy.

Leidy, J. 1856 I, p. 89.
Allen, J. A. 1877 A, xi, p. 931. (Gymnoptychus chrysodon.)
Allen, J. A. 1877 B, p. 944 (I. typus); p. 945 (Gymnoptychus crysodon); p. 948 (Colotaxis cristatus).
Cope, E. D. 1873 S, p. 1. (Colotaxis cristatus.)
1873 T, p. 5. (Gymnoptychus chrysodon.)
1873 CC, p. 3. (Colotaxis cristatus.)
1874 B, p. 477.
1881 Q.
1883 S, p. 47, fig. 3.
1884 O, p. 835, pl. lxvii, figs. 1–12.
1888 I, p. 8, fig. 5.
1889 C, p. 267, fig. 88.
Hay, O. P. 1899 C, p. 253.
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 412.
Leidy, J. 1869 A, pp. 335, 405, pl. xxvi, figs. 1–6.
1871 C, p. 363.
Matthew, W. D. 1899 A, p. 52.
Roger, O. 1896 A, p. 111.
Schlosser, M. 1884 A, p. 136.
Trouessart, E. L. 1898 A, p. 452.
Tullberg, T. 1899 A, p. 463.
Zittel, K. A. 1893 B, p. 522, fig. 431.
Oligocene (White River); South Dakota, Nebraska, Colorado.

MYSOPS Leidy. Type *M. minimus* Leidy.

Leidy, J. 1871 L, p. 232.
Allen, J. A. 1877 A, xi, p. 936.
Cope, E. D. 1883 S, p. 47. (Syllophodus; no type indicated.)
1884 O, p. 846. (Syllophodus.)
Flower and Lydekker 1891 A, p. 484.
Leidy, J. 1873 B, p. 111.
Nicholson and Lydekker 1889 A, p. 1416 (Syllophodus); p. 1420 (Mysops).
Zittel, K. A. 1893 B, p. 523.

Mysops fraternus Leidy.

Leidy, J. 1873 B, pp. 112, 336, pl. xxvii, figs. 14, 15.
Allen, J. A. 1877 A, xi, p. 937.
Cope, E. D. 1883 S, p. 47. (Syllophodus.)
Matthew, W. D, 1899 A, p. 39.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 452.
Eocene (Bridger); Wyoming.

Mysops minimus Leidy.

Leidy, J. 1871 L, p. 232.
Allen, J. A. 1877 A, p. 937. (M. minutus.)
Cope, E. D. 1883 S, p. 47. (Syllophodus.)
King C. 1878 A, p. 404.
Leidy, J. 1872 B, p. 357.
1873 B, pp. 111, 336, pl. vi, figs. 31, 32.
Matthew W. D. 1899 A, p. 39.
Roger, O. 1896 A, p. 111.
Trouessart, E. L. 1898 A, p. 452.
Eocene (Bridger); Wyoming.

Superfamily MYOMORPHA Brandt.

Brandt, J. F. 1855 A.
Alston, E. R. 1876 A.
Cope, E. D. 1881 E, p. 361.
1883 S, p. 43.
1884 O, p. 812.
1889 P, p. 659.
Flower and Lydekker 1891 A, p. 459.
Gadow, H. 1898 A, p. 43.
Haeckel, E. 1895 A, p. 510.
Lydekker, R. 1896 B.
Nicholson and Lydekker 1889 A, p. 1416.
Roger, O. 1896 A, p. 120.
Schlosser, M. 1884 A, p. 98.
Slade, D. D. 1888 A.
1892 B.
Thomas, O. 1896 A, p. 1016.
Trouessart, E. L. 1898 A, p. 453.
Tullberg, T. 1899 A, pp. 151, 386. (Myomorphi.)
Zittel, K. A. 1893 B, p. 533.

MURIDÆ.

Adloff, P. 1898 A. ("Muriden.")
Alston, E. R. 1876 A, p. 80.
Baird, S. F. 1857 A, p. 427.
Burmeister, H. 1879 B, p. 197. (Murini.)
Coues, E. 1877 B, i, p. 1.
Flower, W. H. 1883 D, p. 418.
Flower and Lydekker 1891 A, p. 461.
Nicholson and Lydekker 1889 A, p. 1416.
Parker, W. K. 1868 A, p. 207.
Thomas, O. 1896 A, p. 1017.
Tomes, J. 1850 A, p. 542.
Trouessart, E. L. 1898 A, p. 458.
Tullberg, T. 1899 A, pp. 242, 432 (Hesperomyidæ; pp. 251, 445 (Muridæ).
Winge, H. 1888 A, p. 123.
Zittel, K. A. 1893 B, p. 537.

CRICETINÆ.

Baird, S. F. 1857 A, p. 445. (Sigmodontes.)
Coues, E. 1877 B, i, p. 7. (Sigmodontes, in part.)
Flower and Lydekker 1891 A, p. 463.
Merriam, C. H. 1894 A, p. 226.
Nehring, A, 1893 A. (Genus Cricetus.)
Palmer, T. S. 1897 A.
Roger, O. 1896 A, p. 120. (Cricetidæ.)
Thomas, O. 1888 B, p. 132. (Criceti.)
1896 A, p. 1019. (Sigmodontinæ.)
Trouessart, E. L. 1898 A, pp. 505, 511.
Tullberg, T. 1899 A, pp. 219, 430.
Zittel, K. A. 1893 B, p. 534. (Cricetidæ.)

EUMYS Leidy. Type *E. elegans* Leidy.

Leidy, J. 1856 I, p. 90.
Cope, E. D. 1874 B, p. 474.
1877 K, p. 300.
1881 E, p. 376.
1883 S, p. 165.
1884 O, p. 848.
Leidy, J. 1871 C, p. 364.
Lydekker, R. 1887 A, p. 322.
Nicholson and Lydekker 1889 A, p. 1418.
Zittel, K. A. 1893 B, p. 535.

Eumys elegans Leidy.

Leidy, J. 1856 I, p. 90.
Allen, J. A. 1877 B, p. 946.
Cope, E. D. 1874 B, p. 474.
Cope, E. D. 1881 E, p. 376.
1881 Q.
1883 S, p. 165, figs. 13, 14.
1884 O, p. 849, pl. lxv, figs. 1-14.
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 412.
Leidy, J. 1869 A, pp. 342, 407, pl. xxvi, figs. 12, 13.
1871 C, p. 364
Lydekker, R. 1887 A, p. 322.
Matthew, W. D. 1899 A, p. 58.
Roger, O. 1896 A, p. 121.
Trouessart, E. L. 1898 A, p. 511.
Zittel, K. A. 1893 B, p. 535, fig. 448.

Oligocene (White River); South Dakota, Colorado, Nebraska.

PEROMYSCUS Gloger. Type *P. arboreus* Gloger.

Unless otherwise indicated the following authorities call this genus *Hesperomys*.

Alston, E. R. 1876 A, p. 84.
Baird, S. F. 1857 A, p. 453.
Burmeister, H. 1879 B, p. 205.
Cope, E. D. 1881 E, p. 376.
1884 O, p. 852.
Coues, E. 1877 B, i, p 43 (Hesperomys); p. 45 (Subg. Vesperimus).
Flower and Lydekker 1891 A, p. 463. (Cricetus.)
Lydekker, R. 1885 B, p 229.
Nicholson and Lydekker 1889 A, p. 1418.
Parker, W. K. 1868 A, p. 207, pl. xxv, figs. 6, 7. (Cricetus.)
Thomas, O. 1888 B, p. 133. (Cricetus.)
1896 A, p. 1019.
Zittel, K. A. 1893 B, p. 535.

Peromyscus leucopus (Raf.).

Baird, S. F. 1857 A, p. 459. (Hesperomys.)
Cope, E. D. 1869 E, p. 173. (Hesperomys.)
1871 I, p. 87. (Hesperomys.)
1881 E, p. 377. (Hesperomys.)
1899 A, p. 201. (Hesperomys leucopus.?)
Coues, E, 1877 B, i, p. 50, pl. iii, figs. 18-21. [Hesperomys (Vesperimus).]
Leidy, J. 1889 H, p. 6. (Hesperomys.)
Roger, O. 1896 A, p 122. (Vesperomys.)

Trouessart, E. L. 1898 A, p. 512.
Wheatley, C. M. 1871 B. (Hesperomys.)
Zittel, K. A. 1893 B, p. 585. (Vesperomys leucopus fossilis.)

Recent; eastern United States from Carolinas to New York. Pleistocene?; caves of Virginia and Pennsylvania, with doubts as to identifications.

Peromyscus loxodon (Cope).

Cope, E. D. 1874 I, p. 148. (Hesperomys.)
Allen, J. A. 1877 B, p. 946. (Eumys.)
Cope, E. D. 1874 O, p. 17. (Hesperomys.)
1875 F, p. 73. (Eumys.)
1877 K, p. 300, pl. lxix, fig. 15. (Eumys.)
1881 E, p. 376. (Hesperomys.)
1881 Q. (Hesperomys.)
Cope, E. D. 1883 S, p. 165. (Hesperomys.)
Matthew, W. D. 1899 A, p. 66.
Roger, O. 1896 A, p. 122. (Hesperomys.)
Trouessart, E. L. 1898 A, p. 512.

Miocene (Loup Fork); New Mexico.

Peromyscus nematodon (Cope).

Cope, E. D. 1879 E, p. 370. (Hesperomys.)
1881 C, p. 176. (Eumys.)
1881 Q. (Hesperomys.)
1883 S, p. 165, fig. 15. (Hesperomys.)
1884 O, p. 852, pl. lxvi, fig. 33. (Hesperomys.)
Matthew, W. D. 1899 A, p. 62. (Hesperomys.)
Roger, O. 1896 A, p. 122. (Hesperomys.)
Trouessart, E. L. 1898 A, p. 512.

Miocene (John Day); Oregon.

PACICULUS Cope. Type *P. insolitus* Cope.

Cope, E. D. 1879 E, p. 370.
1881 E, p. 377.
1883 S, p. 166.
1884 O, p. 853.
Nicholson and Lydekker 1889 A, p. 540.
Scott, W. B. 1895 D.
1895 E, p. 286.
Zittel, K. A. 1893 B, p. 536.

Paciculus insolitus Cope.

Cope, E. D. 1879 E, p. 371.
1881 E, p. 377.
1881 Q.
1883 S, p. 166, fig. 15.
1884 O, p. 854, pl. lxvi, figs. 31, 32.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 124.
Trouessart, E. L. 1898 A, p. 540.

Miocene (John Day); Oregon.

Paciculus lockingtonianus Cope.

Cope, E. D. 1881 C, p. 176. (Eumys.)
1881 E, p. 377.
1881 Q.
1883 S, p. 166.
1884 O, p. 854, pl. lxiv, fig. 10.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 124.
Trouessart, E. L. 1898 A, p. 540.

Miocene (John Day); Oregon.

NEOTOMINÆ.

Merriam, C. H. 1894 A, p. 228.
Baird, S. F. 1857 A, p. 445. (Sigmodontes, in part.)
Coues, E. 1877 B, i, p. 7. (Sigmodontes, in part.)
Thomas, O. 1896 A, p. 1020.
Trouessart, E. L. 1898 A, p. 540.

NEOTOMA Say and Ord. Type *N. floridana* Say and Ord.

Say and Ord, 1825, Jour. Acad. Nat. Sci., Phila., iv, pp. 345, 346.
Alston, E. R. 1876 A, p. 85.
Baird, S. F. 1857 A, p. 486.
Coues, E. 1877 B, i, p. 7.
Flower and Lydekker 1891 A, p. 464.
Merriam, C. H. 1894 A, p. 239.
Nicholson and Lydekker 1889 A, p. 1418.
Trouessart, E. L. 1898 A, p. 541.
Zittel, K. A. 1893 B, p. 536.

Neotoma floridana Say and Ord.

Say and Ord, 1818, Bull. Soc. Philom., Paris, p. 181.
Baird, S. F. 1857 A, p. 487, pl. liii, fig. 2.
Coues, E. 1877 B, i, p. 14, pl. i, figs. 1–4.
Leidy, J. 1869 A, p. 407.
1880 A, p. 347.
1889 H, p. 6.
Merriam, C. H. 1894 A, p. 244.
Rhoads, S. N. 1894 A, p. 346.
Roger, O. 1896 A, p. 124.
Say and Ord, 1825, Jour. Acad. Nat. Sci., Phila., iv, p. 346, pls. xxi, xxii.
Trouessart, E. L. 1898 A, p. 541.

Recent; southeastern United States. Pleistocene?; Pennsylvania?

Neotoma magister Baird.

Baird, S. F. 1857 A, p. 498, pl. liii, fig. 4; pl. liv, fig. 978.
Cope, E. D. 1869 E, p. 173. (N. magister, N. floridana?.)
1883 S, p. 373.
Coues, E. 1877 B, i, p. 29, pl. ii, fig. 13.
Leidy, J. 1869 A, p. 407,
1880 A, p. 347.
Mercer, H. C. 1897 A.
Merriam, C. H. 1894 A, p. 244.
Rhoads, S. N. 1894 A, p. 213.
Roger, O. 1896 A, p. 124.
Trouessart, E. L. 1898 A, p. 542.

Pleistocene; Pennsylvania, Virginia, Kentucky, Missouri.

MICROTINÆ.

Alston, E. R. 1876 A, p. 85. (Arvicolinæ.)
Baird, S. F. 1857 A, p. 506. (Arvicolinæ.)
Blackmore, H. P. 1874 A. (Arvicolidæ.)
Brandt, J. F. 1885 A. (Arvicolini.)
Coues, E. 1877 B, i, p. 131. (Arvicolinæ.)
Flower, W. H. 1883 D, p. 419. (Arvicolinæ.)
Flower and Lydekker 1891 A, p. 465.
Lataste, F., 1883, Le Nat., ii, pp. 323, 332, 343, 347. (Arvicolinæ.)
    1884, Ann. Mus. Civic. Genova, xx, p. 255. (Arvicolinæ.)
Merriam, C. H. 1894 A, p. 227. (Arvicolinæ.)
Miller, G. S. 1896 A, p. 8.
Nehring, A. 1875 A.
Roger, O. 1896 A, p. 124. (Arvicolidæ.)
Thomas, O. 1896 A, p. 1020.
Trouessart, E. L. 1898 A, p. 545.
Tullberg, T. 1899 A, pp. 227, 430. (Arvicolidæ.)
Zittel, K. A. 1893 B, p. 536. (Arvicolidæ.)

ANAPTOGONIA Cope. Type *A. hiatidens* Cope.

Cope, E. D. 1871 I, p. 91. [Arvicola (Anaptogonia).]
    1883 S, p. 373. [Arvicola (Anaptogonia).]
    1896 F, p. 379.
    1899 A, p. 201.
Miller, G. S. 1896 A, p. 74. [Microtus (Anaptogonia).]
Trouessart, E. L. 1898 A, p. 551. (Anaptogenia.)

Anaptogonia cloacina Cope.

Cope, E. D. 1896 A, p. 380.
Trouessart, E. L. 1898 A, p. 551.
    Pleistocene; Pennsylvania.

Anaptogonia hiatidens Cope.

Cope, E. D. 1871 I, p. 91, fig. 18. [Arvicola (Anaptogonia).]
Allen, J. A. 1877 B, p. 947. [Arvicola (Anaptogonia).]
Cope, E. D. 1883 S, p. 373, fig. 24, no. 18. [Arvicola (Anaptogonia):]
    1896 F, p. 379.
    1899 A, p. 201 (A. hiatidens); p. 206 (Schistodelta sulcata[1]).
Miller, G. S. 1896 A, p. 74. [Microtus (Anaptogonia).]
Roger, O. 1896 A, p. 125. (Arvicola.)
Trouessart, E. L. 1898 A, p. 551.
Wheatley, C. M. 1871 B.
    Pleistocene: Pennsylvania.

SYCIUM Cope. Type *S. cloacinum* Cope.

Cope, E. D, 1899 A, p. 203.

Sycium cloacinum Cope.

Cope, E. D. 1899 A, p. 203, text figure, p. 204.
    Pleistocene; Pennsylvania.

MICROTUS Schrank. Type *M. arvalis* (Pall.).

Schrank, F. 1798, Fauna Boica, i, p. 72.

Unless otherwise indicated, the following authors refer to this genus under the name *Arvicola* Lacépède, 1801.

Alston, E. R. 1876 A, p. 85.
Baird, S. F. 1857 A, p. 509.
Blackmore, H. P. 1874 A.
Cope, E. D. 1871 I, p. 87. (Isodelta, subgenus, type *Arvicola speothen*.)
    1896 F, p. 379. (Microtus.)
    1899 A, pp. 201, 204. (Microtus.)
Coues, E. 1877 B, i, p. 149.
Flower and Lydekker 1891 A, p. 466.
Lydekker, R. 1885 B, p. 230.
Miller, G. S. 1896 A, pp. 15, 44 (Microtus); p. 58 (subgenus Pitymys).
Nehring, A. 1875 A.
Owen, R. 1868 A, p. 298.
Parker, W. K. 1868 A, p. 208, pl. xxiv, figs. 9-13.
Scott, W. B. 1892 A, p. 407.
Thomas, O. 1896 A, p. 1021.
Tomes, J. 1850 A, p. 550.
Trouessart, E. L. 1898 A, p. 552. (Microtus.)
Zittel, K. A. 1893 B, p. 536.

Microtus didelta Cope.

Cope, E. D. 1871 I, p. 89, fig. 15 [Arvicola (Pitymys)]: p. 90 [A. (Pitymys) sigmodus].
Allen, J. A. 1877 B, p. 947. [Arvicola (Pitymys) didelta, sigmoda.]
Cope, E. D. 1883 S, p. 373, fig. 24, no. 15. (Arvicola.)
    1899 A, pp. 205, 207.
Roger, O. 1896 A, p. 125. (Arvicola.)
Trouessart, E. L. 1898 A, p. 555 [Microtus (Pitymys)]: p. 562 (M. sigmodus).
Wheatley. C. M. 1871 B. (A. sigmodus.)
    Pleistocene; Pennsylvania.

Microtus diluvianus Cope.

Cope, E. D. 1896 F, p. 381.
    1899 A, p. 205, text figure.
Trouessart, E. L. 1898 A, p. 561.
    Pleistocene; Pennsylvania.

Microtus involutus Cope.

Cope, E. D. 1871 I, p. 89, fig. 16. [Arvicola (Pitymys).]

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[1] This is regarded by Cope as possibly different from *A. hiatidens*.

Allen, J. A. 1877 B, p. 947. (Arvicola.)
Cope, E. D. 1883 S, p. 374, fig. 25.
1899 A, p. 205.
Roger, O. 1896 A, p. 125. (Arvicola.)
Trouessart, E. L. 1898 A, p. 562.
Wheatley, C. M. 1871 B.
Pleistocene; Pennsylvania.

Microtus pennsylvanicus (Ord).

Baird, S. F. 1857 A, p. 523. (Arvicola.)
Cope, E. D. 1871 I, p. 87. (Arvicola riparia.)
Coues, E. 1877 B, i, p. 156, pl. iv, figs. 42–49. (Arvicola riparius.)
Leidy, J. 1862 A, p. 423. ("Arvicola.")
1869 A, p. 406. (Arvicola riparia?.)
1889 H, p. 6. (Arvicola riparius.)
Miller, G. S. 1894 A, p. 190, pl. iii, fig. 2; pl. iv, fig. 1. (Arvicola riparius.)
1896 A, p. 63, fig. 33, *c*. [Microtus (Microtus).]
Trouessart, E. L. 1898 A, p. 562. [Microtus (Microtus).]
Recent; eastern United States. Pleistocene; Illinois, Virginia.

Microtus pinetorum (Le Conte).

Le Conte, J. L., 1829, Ann. Lyc. Nat. Hist. N. Y., iii, p. 132, pl. ii. (Psammomys.)
Baird, S. F. 1857 A, p. 544, pl. liv, No. 1719. [Arvicola (Pitymys).]
Cope, E. D. 1871 I, p. 87. [Arvicola (Pitymys).]
1899 A, p. 205.
Coues, E. 1877 B, i, p. 219, pl. v, figs. 70–73. [Arvicola (Pitymys).]
Miller, G. S. 1896 A, p. 59, pl. i, fig. 2; text fig. 31, *a*. [Microtus (Pitymys).]
Trouessart, E. L. 1898 A, p. 555. [Microtus (Pitymys).]
Wheatley, C. M. 1871 B.
Recent: United States. Pleistocene?; Pennsylvania. Not given in Cope 1899 A, as found in Port Kennedy cave.

Microtus speothen Cope.

Cope, E. D. 1871 I, p. 87, fig. 13. (Arvicola.)
Allen, J. A. 1877 B, p. 947. [Arvicola (Isodelta) speothen, A. (Pitymys) tetradelta.]
Cope, E. D. 1871 I, p. 88, fig. 14. (Arvicola tetradelta.)
1883 S, p. 373, fig. 24, no. 13 [Arvicola (Isodelta)]; p. 373, fig. 24, no. 14 (A. tetradelta).
1896 F, p. 383.
1899 A, pp. 205, 206.
Miller, G. S. 1896 A, p. 75. [Microtus (Isodelta).]
Roger, O. 1896 A, p. 125. (Arvicola.)
Trouessart, E. L. 1898 A, p. 561.
Wheatley, C. M. 1871 B. (Arvicola.)
Pleistocene; Pennsylvania.

Microtus sp. indet.

Cope, E. D. 1889 F, p. 161. (Arvicola.)
Pleistocene (Equus beds); Oregon.

FIBER Cuv. Type *Castor zibethicus* Linn.

Cuvier, G., 1800, Leçons d Anat. Comp., i, tabl. i.
Baird, S. F. 1857 A, p. 560.
Brandt, J. F. 1855 A, p. 171. (Ondatra.)
Cope, E. D. 1889 C, p. 249.
Coues, E. 1877 B, i, p. 251.
Flower and Lydekker 1891 A, p. 470.
Miller, G. S. 1896 A, pp. 14, 71.
Nicholson and Lydekker 1889 A, p. 1417.
Tomes, J. 1850 A, p. 550.
Tullberg, T. 1899 A, p. 235.
Zittel, K. A. 1893 B, p. 537.

Fiber zibethicus (Linn.).

Linnæus, C., 1766, Syst. Nat. ed. xii, p. 79. (Castor.)
Baird, S. F. 1857 A, p. 561, pl. liv.
Brandt, J. F. 1855 A, p. 171, pl. iii, figs, 9–16. (Ondatra.)
Coues, E. 1877 B, i, p. 254.
Flower and Lydekker 1891 A, p. 471, fig. 209.
Holmes, F. S. 1850 B, p. 201. ("Muskrat.")
Leidy, J. 1860 B, p. 113, pl. xxii, figs. 1–4.
1869 A, p. 406.
Miller, G. S. 1896 A, p. 72, pl. ii, fig. 13, text figs. 37–39.
Owen, R. 1866 B, p. 375, fig. 241.
Roger, O. 1896 A, p. 126.
Trouessart, E. L. 1898 A, p. 566.
Tullberg, T. 1899 A, p. 235.
Wheatley, C. M. 1871 A. (Fiber sp. indet.)
Recent; North America north of Mexico. Pleistocene; South Carolina, New Jersey, Pennsylvania?.

HELISCOMYS Cope. Type *H. vetus* Cope.

Cope, E. D. 1873 CC, p. 3.
Allen, J. A. 1877 A, xi, p. 936.
Cope, E. D. 1874 B, p. 475.
1881 E, p. 375.
1883 S, p. 57.
1884 O, p. 845.
Nicholson and Lydekker 1889 A, p. 1419.
Zittel, K. A. 1893 B, p. 582.
A genus of uncertain position.

Heliscomys vetus Cope.

Cope, E. D. 1873 CC, p. 3.
Allen, J. A. 1877 A, xi, p. 936.
Cope, E. D. 1874 B, p. 475.
1881 E, p. 375.
1881 Q.
1883 S, p. 56, fig. 13,*a–d*.
1884 O, p. 847, pl. lxv, figs. 14–18.
Matthew, W. D. 1899 A, p. 52.
Roger, O. 1896 A, p. 120.
Trouessart, E. L. 1898 A, p. 578.
Oligocene (White River); Colorado.

GEOMYIDÆ.

Alston, E. R. 1876 A, p. 87.
Baird, S. F. 1857 A. p. 364. (Saccomyidæ.)
Brandt, J. F. 1855 A, p. 188. (Sciurospalacoides.)
Cope, E. D. 1875 B. (Saccomyidæ.)
Coues, E. 1875 B, p. 275.
 1875 C, p. 130.
 1877 B, viii, p. 488 (Saccomyidæ); p. 492 (Geomyidæ); x, p. 607 (Geomyidæ).
Flower, W. H. 1883 D, p. 419.
Flower and Lydekker 1891 A, p. 478.
Merriam, C. H. 1895 A.
Nicholson and Lydekker 1889 A, p. 1416.
Roger, O. 1896 A, p. 119.
Scott, W. B. 1895 D, p. 283.
Thomas, O. 1896 A, p. 1022.
Trouessart, E. L. 1898 A, p. 571.
Tullberg, T. 1899 A, pp. 312, 475 (Geomyidæ); p. 465 (Protoptychidæ).
Winge, H. 1888 A, p. 138. (Saccomyidæ.)
Zittel, K. A. 1893 B, p. 532.

PROTOPTYCHUS Scott. Type *P. hatcheri* Scott.

Scott, W. B. 1895 E, p. 269.
 1895 D, p. 923.
Tullberg, T. 1899 A, p. 465.

Protoptychus hatcheri Scott.

Scott, W. B. 1895 E, p. 269, figs. 1-6.
Matthew, W. D. 1899 A, p. 49.
Roger, O. 1896 A, p. 119.
Scott, W. B. 1895 D, p. 923.
Trouessart, E. L. 1898 A, p. 577.
Tullberg, T. 1899 A, p. 464.
 Eocene (Uinta); Utah.

GEOMYS Raf. Type *Mus tuza* Ord.

Rafinesque, C. S., 1817, Amer. Month. Mag., ii, p. 45.
Alston, E. R. 1876 A, p. 87.
Baird, S. F. 1857 A, p. 368.
Coues, E. 1875 C, p. 130.
 1877 B, x, p. 611.
Flower and Lydekker 1891 A, p. 478.
Merriam, C. H. 1895 A, p. 109.
Nicholson and Lydekker 1889 A, p. 1416.
Tomes, J. 1850 A, p. 549.
Trouessart, E. L. 1898 A, p. 571.

Geomys bisulcatus Marsh.

Marsh, O. C. 1871 E, p. 121.
Allen, J. A. 1877 B, p. 947.
King, C. 1878 A, p. 430.
Matthew, W. D. 1899 A, p. 66.
Roger, O. 1896 A, p. 120.
Trouessart, E. L. 1898 A, 571.
 Miocene (Loup Fork); Nebraska.

Geomys bursarius (Shaw).

Shaw, G., 1800, Trans. Linn. Soc. v, p. 227, pl. viii. (Mus.)
Baird, S. F. 1857 A, p. 372, pl. i, fig. 2.
Cope, E. D. 1869 E, p. 173.
Coues, E. 1875 C, p. 131.
 1877 B, x, p. 613.
Leidy, J. 1862 A. (Pseudostoma,)
 1867 B.
 1869 A, p. 406.
Merriam, C. H. 1895 A, p. 120, pl. i; pl. ix, figs. 8, 9; pl. x, fig. 6; pl. xiii, fig. 11; pl. xiv, fig. 2; pl. xv, fig. 11; pl. xvii, fig. 3; pl. xviii, fig. 1; pl. xix, fig. 3; text figs. 1, 8, 11, 55; with synonomy.
Trouessart, E. L. 1898 A, p. 571.
Williston, S. W. 1897 I, p. 304.
 Recent; Mississippi Valley. Pleistocene; Illinois, Nebraska.

THOMOMYS Wied. Type *T. rufescens* Wied.

Wied., 1839, N. Act. Acad. Leop. Carol., xix, p. 377.
Allen, J. A. 1893, A, pp. 58, 64.
Alston, E. R. 1876 A, p. 87.
Baird, S. F. 1857 A, p. 388.
Coues, E. 1875 C, p. 134.
 1877 B, x, p. 621.
Flower and Lydekker 1891 A, p. 478.
Merriam, C. H. 1898 A, p. 198,
Nicholson and Lydekker 1889 A, p. 1416.
Trouessart, E. L. 1898 A, p. 575.

Thomomys bulbivorus (Richardson).

Richardson, J., 1829, Fauna Bor.-Amer., i, p. 206, pl. 18B.
Allen, J. A. 1893 A, p. 56, pl. i, fig. 14.
Baird, S. F. 1857 A, p. 389, pl. lii, fig. 1.
Brandt, J. F. 1855 A, p. 187. ((Tomomys.)
Cope, E. D. 1883 S, p. 374.
 1889 S, p. 980.
Coues, E, 1875 C, p. 136. (T. talpoides bulbivorus.)
 1877 B, x, p. 626. (T. talpoides bulbivorus.)
Merriam, C. H. 1895 A, p. 198, figs 68-71.
Trouessart, E. L. 1898 A, p. 575.
Tullberg, T. 1899 A, p. 328.
 Recent; northwestern United States. Pleistocene; Oregon.

Thomomys clusius Coues.

Coues, E. 1875 C, p. 138.
Allen, J. A. 1893 A, pp. 61, 62, pl. i, fig. 2.
Cope, E. D. 1878 H, p. 389. ("Thomomys near clusius.")
 1889 F.
 1889 S, p. 980.
Coues, E. 1877 B, x, p. 629, pl. vii.
Trouessart, E. L. 1898 A p. 576.
 Recent; Wyoming, Idaho. Pleistocene; (Equus beds); Oregon.

Thomomys talpoides Richardson.

Richardson, J., 1828, Zool. Jour., iii, p. 518.
Allen, J. A. 1893 A, p. 66.
Cope, E. D. 1878 H, p. 389.
1889 F.
Coues, E. 1875 C, pp. 134, 135.
Coues, E. 1877 B, x, p. 628.
Roger, O. 1896 A, p. 120.
Trouessart, E. L. 1898 A, p. 576.
Recent; Canada to Upper Missouri River, Pleistocene; Oregon.

PLEUROLICUS Cope. Type *P. sulcifrons* Cope.

Cope, E. D. 1879 D, p. 66.
1879 B, p. 55.
1881 E, p. 380.
1883 S, p. 166.
1884 O, p. 866.
Flower and Lydekker 1891 A, p. 479.
Nicholson and Lydekker 1889 A, p. 1416,
Scott, W. B. 1895 D.
1895 E, pp. 270, 286,
Zittel, K. A. 1893 B, p. 533.

Pleurolicus diplophysus Cope.

Cope, E. D. 1881 E, p. 381.
1881 Q.
1883 S, p. 167, fig. 16, *c*, *d*.
1884 O, pp. 867, 869, pl. lxiv, fig. 9.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 120.
Scott, W. B. 1895 E, p. 284, figs. 5, 6.
Trouessart, E. L. 1898 A, p. 578.
Miocene (John Day); Oregon.

Pleurolicus leptophrys Cope.

Cope, E. D. 1881 E, p. 381.
1881 Q.
1883 S, p. 167, fig. 16, *a*, *b*.
1884 O, p. 868, pl. lxiv, figs. 7, 8.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 120.
Trouessart, E. L. 1898 A, p. 578.
Miocene (John Day); Oregon.

Pleurolicus sulcifrons Cope.

Cope, E. D. 1879 D, p. 66.
1879 B, p. 55.
1881 E, p. 381.
1881 Q.
1883 S, p. 167,
1884 O, p. 867, pl. lxiv, fig. 6.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 120.
Trouessart, E. L. 1898 A, p. 578.
Miocene (John Day); Oregon.

ENTOPTYCHUS Cope. Type *E. cavifrons* Cope.

Cope, E. D. 1879 D, p. 64.
1881 E, p. 378.
1883 S, p. 168.
1884 O, p. 855.
Flower and Lydekker 1891 A, p. 479.
Nicholson and Lydekker 1889 A, p. 1416.
Scott, W. B. 1895 D.
1895 E, p. 286.
Zittel, K. A. 1893 B, p. 533.

Entoptychus cavifrons Cope.

Cope, E. D. 1879 D, p. 64.
1879 B, p. 55.
1881 E, p. 380.
1881 Q.
1883 S, p. 169.
1884 O, pp. 858, 862, pl. lxiv, fig. 4.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 120.
Trouessart, E. L. 1898 A, p. 578.
Miocene (John Day); Oregon.

Entoptychus crassiramis Cope.

Cope, E. D. 1879 D, p. 65.
1879 B, p. 55.
1881 E, p. 380.
1881 Q.
1883 S, p. 168, fig. 17.
1884 O, pp. 858, 864, pl. lxiv, fig. 5.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 120.
Trouessart, E L. 1898 A p. 579.
Miocene (John Day), Oregon.

Entoptychus lambdoideus Cope.

Cope, E. D. 1881 E, p. 380.
1881 Q.
1883 S, p. 169.
1884 O, pp. 858, 860, pl. lxiv, fig. 2.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 120.
Trouessart, E. L. 1898 A, p. 578.
Miocene (John Day); Oregon.

Entoptychus minor Cope.

Cope, E. D. 1881 E, p. 379.
1881 Q.
1883 S, p. 170.
1884 O, pp 858, 861, pl. lxiv, fig. 3.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 120.
Trouessart, E. L. 1898 A, p. 578.
Miocene (John Day), Oregon.

Entoptychus planifrons Cope.

Cope, E D. 1879 D, p. 65.
1879 B, p. 55.
1881 E, p 379.
1881 Q.
1883 S, p. 167, fig. 18.
Matthew, W. D 1899 A, p 62.
Roger, O. 1896 A p. 120.
Trouessart E. L 1898 A p 578.
Zittel K A 1893 B p. 533 fig. 445.
Miocene (John Day). Oregon.

DIPODIDÆ.

Allen, J. A. 1900 A, p. 199.
Baird, S. F. 1857 A, p. 428. (Dipodinæ.)
Flower, W. H. 1883 D, p. 419.
Flower and Lydekker 1891 A, p. 479.
Nicholson and Lydekker 1889 A, p. 1416.
Thomas, O. 1896 A, p. 1023.
Tullberg, T. 1899 A, pp. 182, 408.
Winge, H. 1888 A, p. 118.
Zittel, K. A. 1893 B, p. 526.

ZAPODINÆ.

Coues, E., 1875, Bull. U. S. Geol. Surv., ser. 2, no. 5, p. 253. (Zapodidæ.)
Alston, E. R. 1876 A, p. 89. (Jaculinæ.)
Coues, E. 1877 B, vii, p. 454. (Zapodidæ.)
Flower and Lydekker 1891 A, p. 480.
Thomas, O. 1896 A, p. 1023.
Trouessart, E. L. 1898 A, p. 590.

ZAPUS Coues. Type *Dipus hudsonius* Zimm.

Coues, E., 1875, Bull. U. S. Geol. Surv. Terr., ser. 2, no. 5, p. 253.
Allen, J. A. 1900 A, p. 200.
Baird, S. F. 1857 A, p. 429. (Jaculus.)
Brandt, J. F. 1855 A. (Jaculus.)
Coues, E. 1876 A.
1877 B, vii, p. 465.
Flower and Lydekker 1891 A, p. 480.
Nicholson and Lydekker 1889 A, p. 1416.
Palmer, T. S. 1897 A.
Preble, E. A. 1899 A, p. 13.
Thomas, O. 1896 A, p. 1023, footnote.

Zapus hudsonius (Zimm.)

Zimmermann, E., 1780, Geog. Gesch., ii, p. 358. (Dipus.)
Allen, J. A. 1900 A, p. 201.
Baird, S. F. 1857 A, p. 430. (Jaculus.)
Cope, E. D. 1871 I, p. 86. (Jaculus.)
1883 S, p. 373. (Meriones.)
1899 A, p. 200.
Coues, E. 1876 A.
1877 B, vii, p. 465.
Flower and Lydekker 1891 A, p. 480. (Z. hudsonianus.)
Nicholson and Lydekker 1889 A, p. 1416.
Preble, E. A. 1899 A, p. 15, pl. i, figs. 3, 3a.
Trouessart, E. L. 1898 A, p. 590.
Tullberg, T. 1899 A, p. 185.
Wheatley, C. M. 1871 B. (Jaculus.)
Zittel, K. A. 1893 B, p. 527.

Recent; Alaska to Hudson Bay, south to New Jersey, west to Iowa and Missouri. Pleistocene; Pennsylvania.

Superfamily HYSTRICOMORPHA.

Alston, E. R. 1876 A, p. 91.
Brandt, J. F. 1855 A.
Cope, E. D. 1881 E, p. 361.
1883 S, p. 43.
1884 O, p. 812.
Flower and Lydekker 1891 A, p. 480.
Gadow, H. 1898 A, p. 48.
Haeckel, E. 1895 A, p. 510.
Lydekker, R. 1896 B.
Nicholson and Lydekker 1889 A, p. 1413.
Schlosser, M. 1884 A, p. 98.
1890 C, p. 250.
Slade, D. D. 1888 A, p. 243.
1892 B.
Steinmann and Döderlein 1890 A, p. 733.
Thomas, O. 1896 A, p. 1024.
Tullberg, T. 1899 A, pp. 82, 363.
Zittel, K. A. 1893 B, p. 539.

HYSTRICIDÆ.

Allen, J. A. 1877 A, iii, p. 385.
Alston, E. R. 1876 A, p. 93.
Baird, S. F. 1857 A, p. 565.
Cope, E. D. 1875 C, p. 26.
Flower, W. H. 1883 D, p. 420.
Flower and Lydekker 1891 A, p. 484.
Leidy, J. 1871 C, p 364.
Nicholson and Lydekker 1889 A, p. 1415.
Roger, O. 1896 A, p. 127.
Trouessart, E. L. 1898 A, p. 614.
Tullberg, T, 1899 A, pp. 83, 366.
Turner, H. N. 1848 A.
Winge, H. 1888 A, p. 126.
Zittel, K. A. 1893 B, p. 539.

No species of this family, as its limits are here recognized, are found in North America.

ERETHIZONTIDÆ.

Thomas, O. 1896 A, p 1025.
Allen, J. A 1877 A, iii, p. 385. (Hystricidæ, in part.)
Baird, S F. 1857 A, p 565 (Hystricidæ, in part.)
Flower, W H. 1883 D, p. 420. (Hystricidæ, in part.)
Trouessart, E L 1898 A, p 619. (Cœndidæ.)
Tullberg, T. 1899 A, pp. 108, 368.

ERETHIZONTINÆ.

Thomas, O. 1896 A, p. 1025.

ERETHIZON F. Cuv. Type *Hystrix dorsata* Linn.

Cuvier, F., 1822, Mém. de Muséum, Paris, ix, p. 426.
Allen, J. A. 1877 A, iii, p. 386.
Alston, E. R. 1876 A, p. 94. (Erythizon.)
Flower, W. H. 1883 D, p. 420.
Flower and Lydekker 1891 A, p. 484.
Leidy, J. 1858 E, p. 22. (Hystricops, subgenus.)
Nicholson and Lydekker 1889 A, p. 1415.
Winge, H. 1888 A, p. 129.
Zittel, K. A. 1893 B, p. 540.

Erethizon cloacinus Cope.

Cope, E. D. 1871 I, p. 93, fig. 19.
Allen, J. A. 1877 A, iii, p. 398.
Cope, E. D. 1883 S, p. 379.
1899 A, p. 199.
Roger, O. 1896 A, p. 127.
Trouessart, E. L. 1898 A, p. 620.
Wheatley, C. M. 1871 B.
Pleistocene; Pennsylvania.

Erethizon dorsatus (Linn.).

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 57. (Hystrix.)
Allen, J. A. 1877 A, iii, p. 568.
Cope, E. D. 1899 A, p. 198. (E. dorsatum?)
Leidy, J. 1889 H, p. 5.
Trouessart, E. L. 1898 A, p. 620.
Tullberg, T. 1899 A, p. 109.
Recent; northeastern U. S.; Canada, west to Saskatchewan. Pleistocene; Pennsylvania.

Erethizon venustus (Leidy).

Leidy, J. 1858 E, p. 22. [Hystrix (Hystricops).]
Allen, J. A. 1877 A, iii, p. 397. (Hystrix? venustus.)
Cope, E. D. 1881 Q. (Hystrix.)
Hayden, F. V. 1858 B, p. 407. (Hystrix.)
King, C. 1878 A, p. 430. (Hystrix.)
Leidy, J. 1869 A, pp. 343, 407, pl. xxvi, figs. 23, 24. (Hystrix.)
1871 C, p. 364. (Hystrix.)
Roger, O. 1896 A, p. 127.
Trouessart E. L. 1898 A, p. 620.
Zittel, K. A. 1893 B, p. 540.
Pleistocene; Nebraska.

CASTOROIDIDÆ.

Allen, J. A. 1887 A, v, p. 419.
Flower and Lydekker 1891 A, p. 488.
Moore, J. 1891 A.
Nicholson and Lydekker 1889 A, p. 1415.
Roger, O. 1896 A, p. 136.
Trouessart, E. L. 1898 A, p. 630.
Zittel, K. A. 1893 B, p. 547.

CASTOROIDES Foster. Type *C. ohioensis* Foster.

Foster, J. W. 1838 A, p. 81,
Allen, J. A. 1877 A, v, p. 419.
Alston, E. R. 1876 A, p. 78.
Baird, S. F. 1857 A, p. 363.
Cope, E. D. 1883 S, p. 370.
Flower and Lydekker 1891 A, p. 488.
Moore, J. 1893 A, p. 67.
Nicholson and Lydekker 1889 A, p. 1415.
Pictet, F. J. 1853 A, p. 252.
Scott, W. B. 1892 A, p. 410.
Winge, H. 1888 A, p. 139.
Wyman, J. 1846 B, p. 391.
1850 A, p. 56.
Zittel, K. A. 1893 B, p. 547.

Castoroides ohioensis Foster.

Foster, J. W. 1838 A, p. 81, figs. A–D.
Agassiz, L. 1851 B.
Allen, J. A. 1877 A, v, p. 423.
Alston, E. R. 1876 A, p. 79.
Baird, S. F. 1857 A, p. 363.
Cope, E. D. 1883 S, p. 370, figs. 22, 23.
1888 I, p. 6, figs. 3, 4.
1889 C, p. 264.
Cope and Wortman 1884 A, p. 37, pl. iv, figs. 1–3.
De Kay, J. E. 1842 C, p. 75, pl. xi, fig. 3 [Castor (Trogotherium) ohionis].
Foster, J. W. 1837 A, p. 80, figs. 15–18. (No generic or specific name.)
Hall, J. 1846 A.
1846 B.
Kindle, E. M. 1898 A, p. 485.
Langdon, F. W. 1883 A.
Le Conte, J. L. 1852 C.
Leidy, J. 1860 B, p. 114, pl. xxii, figs. 5–8.
1867 C, p. 97.
1869 A, p. 405.
1880 A, p. 347.
1889 H, p. 14, pl. ii, figs. 7–20.
Mercer, H. C. 1894 A, p. 98.
Miller, G. S. 1899 B, p. 375.
Moore, J. 1890 A.
1890 B.
1891 A.
1893 A.
1900 A, p. 171, pls. i, ii.
Newberry, J. S. 1870 A, p. 83.
1874 A, p. 92.
1875 A, p. vi.
Pictet, F. J. 1853 A, p. 253.
Pomel, A. 1848 D, p. 165.
Roger, O. 1896 A, p. 136.
Trouessart, E. L. 1898 A, p. 630.
Whittlesey, C. 1848 A, p. 215.
Wyman, J. 1846 A.
1846 B, pls. 37–39.
1850 A, pp. 62–64, fig. 5.
1850 D, p. 280.
Tullberg, T. 1899 A, p. 474.
Pleistocene; Ohio, Indiana, Illinois, Tennessee, New York, South Carolina, Pennsylvania, Texas, Michigan.

DASYPROCTIDÆ.

Adloff, P. 1898 A, p. 388. (Genus Dasyprocta.)
Alston, E. R. 1876 A, p. 95.
Flower and Lydekker 1889 A, p. 488.
Nicholson and Lydekker 1889 A, p. 1414.
Parker, W. K. 1868 A, p. 207, pl. xxiv, fig. 8. (Genus Dasyprocta.)
Roger, O. 1896 A, p. 128.
Trouessart, E. L. 1898 A, p. 633.
Tullberg, T. 1899 A, pp. 90, 370. (Caviidæ, in part.)
Winge, H. 1888 A, p. 135. (Dasyproctini.)
Zittel, K. A, 1893 B, p. 540.

Agouti Lacépède. Type *Mus paca* Linn.

Lacépède, B. G., 1799, Tab. ord., gen. mamm., p. 9.
Cuvier, F., 1807, Ann. Mus., Paris, x, p. 203. (Cœlogenys.)
Flower and Lydekker 1891 A, p. 489. (Cœlogenys.)
Harlan, R. 1825 A, p. 126. (Osteopera, type *O. platycephala*=C. paca.)
Palmer, T. S. 1897 A.
Thomas, O. 1896 A, p. 1026. (Cœlogenys.)
Trouessart, E. L. 1898 A, p. 635. (Cœlogenys.)
Tullberg, T. 1899 A, p. 91. (Cœlogenys.)

Agouti paca (Linn.).

Linnæus, C., 1766, Syst. Nat., ed. 12, p. 81. (Mus.)
Harlan, R. 1825 A, p. 126. (Osteopera platycephala.)
Leidy, J. 1869 A, p. 444. (Cœlogenys.)
Palmer, T. S. 1897 A.
Pictet, F. J. 1853 A, p. 254. (Cœlogenys.)
Roger, O. 1896 A, p. 129. (Cœlogenys.)
Trouessart, E. L. 1898 A, p. 635. (Cœlogenys.)
Tullberg, T. 1899 A, p. 91.

Recent; Mexico to Paraguay. Reported by Harlan as a fossil found in vicinity of Philadelphia; but doubtless transported thither.

CAVIIDÆ.

Adloff, P. 1898 A, p. 387. (Genus Cavia.)
Alezais, H. 1898 A. (Genus Cavia.)
1899 A. (Genus Cavia.)
Flower and Lydekker 1891 A, p. 489.
Thomas, O. 1896 A, p. 1026.
Trouessart, E. L. 1898 A, p. 636.
Tullberg, T. 1899 A, pp. 90, 370. (In part).
Zittel, K. A. 1893 B, p. 544.

Hydrochœrus Brisson. Type *Sus hydrochæris* Linn.

Brisson, A. D., 1762, Reg. Anim., pp. 12, 80.
Burmeister, H. 1879 B, p. 263.
Flower and Lydekker 1891 A, p. 490.
Leidy, J. 1853 E, p. 241. (Oromys, type *O. æsopi*; no description.)
Nicholson and Lydekker 1889 A, p. 1414.
Owen, R. 1868 A, p. 295, fig. 235.
Schlosser, M. 1890 C, p. 251.
Thomas, O. 1896 A, p. 1026.
Tomes, J. 1850 A, p. 557.
Tullberg, T. 1899 A, p. 105.
Zittel, K. A. 1893 B, p. 546.

Hydrochœrus æsopi Leidy.

Leidy, J. 1856 J, p. 165.
Allen, J. A. 1877 B, p. 949.
Cope, E. D. 1883 S, p. 379, fig. 30.
1888 I, p. 9, fig. 6.
Leidy, J. 1853 E, p. 241. (Oromys æsopi; no description.)
Leidy, J. 1860 B, p. 112, pl. xxi, figs. 3–6.
1869 A, p. 407.
Roger, O. 1896 A, p. 136.
Trouessart, E. L. 1898 A, p. 643.

Pleistocene; South Carolina.

Hydrochœrus robustus Leidy.

Leidy, J. 1888 B, p. 276, fig. 1.
1890 B, p. 184. (H.? magnus Gerv. and Amegh.)
Roger, O. 1896 A, p. 136.

Pleistocene, Nicaragua, Florida?.

There is doubt about the identification of the Florida specimen.

Dr. Jeffries Wyman has reported the finding of a skull of the capybara, *H. hydrochæris*, on the southwestern frontier of the United States. Proc. Bost. Soc. Nat. Hist., vii, 1860, p. 350.

Suborder DUPLICIDENTATA.

Alston, E. R. 1876 A.
Flower and Lydekker 1891 A, p. 491.
Nicholson and Lydekker 1889 A, p. 1412.
Palmer, T. S. 1897 A.
Schlosser, M. 1884 A, p. 123. (Pliodonta.)
Thomas, O. 1896 A, p. 1026.
Tullberg, T. 1899 A, pp. 42, 338.
Woodward, A. S. 1898 B, p. 377.

Superfamily LAGOMORPHA.

Brandt, J, F. 1855 A.
Cope, E. D. 1881 E, p. 361.
1883 S, p. 43.
1884 O, p. 812.
Gadow, H. 1898 A. p. 42.
Lydekker, R. 1896 B.
Major, Fors. 1893 A, p. 208.
1899 A, p. 433.
Roger, O. 1896 A, p. 140.
Schlosser, M. 1884 A, p. 98.
Slade, D. D. 1892 B.
Steinmann and Döderlein 1890 A, p. 735.
Thomas, O. 1896 A, p. 1026.
Zittel, K. A. 1893 B, p. 549.

OCHOTONIDÆ.

Trouessart, E. L. 1898 A, p. 644.
Allen, J. A. 1877 A, iv, p. 405. (Lagomyidæ.)
Flower, W. H. 1883 D, p. 421. (Lagomyidæ.)
Flower and Lydekker 1891 A, p. 491. (Lagomyidæ.)
Major, Fors. 1899 A, p. 463. (Lagomyidæ.)
Schlosser, M. 1884 A, p. 9. (Lagomyidæ.)
Tullberg, T. 1899 A, p. 53. (Lagomyidæ.)
Zittel, K. A. 1893 B, p. 551. (Lagomyidæ.)

OCHOTONA Link. Included *O. pusillus*, *alpinus*, and *ochotona*.

Link H. F., 1795, Zool. Beytr., i, pt. ii, p. 74.
Allen, J. A. 1877 A, p. 407. (Lagomys.)
Cope, E. D. 1871 I, p. 93. (Praotherium.)
Cuvier, G., 1798, Tabl. Elém., p. 132. (Lagomys.)
Flower and Lydekker 1891 A, p. 491. (Lagomys.)
Major, Fors. 1899 A, p. 433. (Lagomys.)
Meyer, H. 1845 A. (Lagomys.)
Thomas, O. 1896 A, p. 1026.
Trouessart, E. L. 1898 A, p. 645 (Ochotona); p. 649 (Praotherium).
Winge, H. 1888 A, p. 112. (Lagomys.)
Zittel, K. A. 1893 B, p. 553. (Lagomys.)

Ochotona palatinus (Cope).

Cope, E. D. 1871 I, pp. 94, 102, fig. 20. (Praotherium.)
1883 S, p. 379. (Lagomys.)
1899 A, p. 209. (Lagomys.)
Roger, O. 1896 A, p. 140. (Praotherium.)
Trouessart, E. L. 1898 A, p. 649. (Praotherium.)
Pleistocene; Pennsylvania.

LEPORIDÆ.

Allen, J. A. 1877 A, ii, p. 265.
Alston, E. R. 1876 A, p. 97.
Baird, S. F. 1857 A, p. 572.
Brandt, J. F. 1855 A.
Cope, E. D. 1881 J, p. 545.
Flower and Lydekker 1891 A, p. 492.
Giebel, C. G. 1880 A.
Hemstedt, R. 1870 A.
Hilgendorf, F. 1866 A, p. 673.
Howes, G. B. 1887 B.
Leidy, J. 1871 C, p. 363.
Major, Fors. 1899 A, p. 465.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1412.
Parker, W. K. 1868 A, p. 207.
Roger, O. 1896 A, p. 140.
Steinmann and Döderlein 1890 A, p. 735.
Thomas, O. 1896 A, p. 1027.
Tomes, J. 1850 A, p. 560.
Trouessart, E. L. 1898 A, p. 648.
Tullberg, T. 1899 A, p. 50.
Winge, H. 1888 A, p. 110.
Woodward, M. F. 1894 A.
Zittel, K. A. 1893 B, p. 550.

PALÆOLAGUS Leidy. Type *P. haydeni* Leidy.

Leidy, J. 1856 I, p. 89.
Cope, E. D. 1873 T, p. 4. (Tricium, type *T. avunculus* = P. haydeni.)
1874 B, p. 477.
1881 E, p. 381.
1883 S, p. 170.
1884 O, p. 870.
Leidy, J. 1869 A, p. 331.
1871 C, p. 363.
Lydekker, R. 1887 A, p. 325.
Major, Fors. 1899 A, pp. 443, 470.
Nicholson and Lydekker 1889 A, p. 1412.
Winge, H. 1888 A, p. 113.
Zittel, K. A. 1893 B, p. 550.

Palæolagus haydeni Leidy.

Leidy, J. 1856 I, p. 89.
Cope, E. D, 1873 S, p, 1. (P. agapetillus.)
1873 T, p. 4 (Tricium avunculus); p. 5 (T. agapetillum).
1873 CC, p. 4. (Tricium agapetillum, T. annæ, T. avunculus.)
1874 B, p. 478. (P. haydeni, P. agapetillus.)
1879 B, p. 55.
1879 D, p. 63.
1881 E, p. 384. (P. haydeni, P. agapetillus.)
1881 Q. (P. haydeni, P. agapetillus.)
1883 S, p. 173, fig. 20.
1884 O, pp. 874, 875, pl. lxvi, figs. 1–27.
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 412.
Leidy, J. 1869 A, pp. 331, 404, pl. xxvi, figs. 14–20.
1871 C, p. 363.
Lydekker, R. 1887 A, p. 326.

Major, Fors. 1899 A, p. 443, pl. xxxvi, fig. 36.
Matthew, W. D. 1899 A, 53.
Roger, O. 1896 A, p. 140.
Trouessart, E. L. 1898 A, p. 648.
Zittel, K. A. 1893 B, p. 550, fig. 464.
Oligocene (White River); South Dakota, Nebraska, Colorado, Oregon?.

Palæolagus intermedius Matth.

Matthew, W. D. 1899 A, p. 53.
Oligocene (White River); Colorado.

Palæolagus leporinus (Cope).

Cope, E. D. 1873 T, p. 5. (Tricium.)
1873 CC, p. 4. (Tricium.)
Oligocene (White River); Colorado.

This is probably a synonym of *P. haydeni*. It was not recognized by Professor Cope after 1873; but I do not find that he referred it to any of his other species.

Palæolagus triplex Cope.

Cope, E. D. 1873 T, p. 4.
1873 CC, p. 4.
1874 B, p. 479.
1881 E, p. 384.
1883 S, p. 173.
1884 O, pp. 874, 881, pl. lxvi, fig. 28.
Major, Fors. 1899 A, p. 443.
Matthew, W. D. 1899 A, p. 53.
Roger, O. 1896 A, p. 140.
Trouessart, E. L. 1898 A, p. 648.
Oligocene (White River); Colorado.

Palæolagus turgidus Cope.

Cope, E. D. 1873 T, p. 4. (P. turgidus, Tricium paniense.)
1873 CC, p. 4. (P. turgidus, Tricium paniense.)
1874 B, p. 479. (P. turgidus, Tricium paniense.)
1881 E, p. 384.
1881 Q.
1883 S, p. 173.
1884 O, pp. 874, 882, pl. lxvi, fig. 28; pl. lxvii, figs. 13–27.
1885 H.
1886 U, p. 80.
1889 I.
1891 A, p. 5, pl. xiv, fig. 9.
Lydekker, R. 1887 A, p. 326.
Matthew, W. D. 1899 A, p. 52.
Roger, O, 1896 A, p. 140.
Trouessart, E. L. 1898 A, p. 848.
Oligocene (White River); Colorado, western Canada.

Panolax Cope. Type *P. sanctæfidei* Cope.

Cope, E. D. 1874 I, p. 151.
1874 O, p. 17.
1877 K, p. 295.
1881 E, p. 381.
1883 S, p. 173.
Nicholson and Lydekker 1889 A, p. 1412.
Zittel, K. A. 1893 B, p. 550.

Panolax sanctæfidei Cope.

Cope, E. D. 1874 I, p. 151.
Cope, E. D. 1874 O, p. 17.
1875 F, p. 78.
1877 K, p. 296, pl. lxix, figs. 16–22. (P. sanctæfidæi.)
1881 Q, p. 586.
1883 S, p. 173.
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 140.
Trouessart, E. L. 1898 A, p. 648.
Miocene (Loup Fork); New Mexico.

Lepus Linn. Type *L. timidus* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 57.
Adloff, P. 1898 A, p. 392.
Allen, J. A. 1877 A, ii, p. 282.
Baird, S. F. 1857 A, p. 573.
Cope, E. D. 1881 E, p. 384.
1883 S, p. 173.
1884 O, p. 885.
1889 C, p. 269.
Flower, W. H. 1885 A.
Flower and Lydekker 1891 A, p. 492.
Giebel, C. G. 1880 A.
Hilgendorf, F. 1866 A, p. 673.
Howes, G. B. 1896 A.
Huxley, T. H. 1872 A, p. 371.
Major, Fors. 1899 A, pp. 433, 463.
Owen, R. 1866 B, pp. 364, 367, figs. 229, 233.
Parker, W. K. 1868 A, p. 207, pl. xxv, figs. 1–5.
Tomes, J. 1850 A, p. 560.
Trouessart, E. L. 1898 A, p. 649.
Zittel, K. A. 1893 B, p. 550.

Lepus ennisianus Cope.

Cope, E. D. 1881 E, p. 385.
1881 Q.
1883 S, p. 173, fig. 21.
Cope, E. D. 1884 O, pp. 881, 886, pl. lxiv, fig. 11; pl. xlvi, fig. 29.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 140.
Trouessart, E. L. 1898 A, p. 649.
Miocene (John Day); Oregon.

Lepus sylvaticus Bachm.

Bachman, J., 1837, Jour. Acad. Nat. Sci., Phila., vii, p. 403.
Allen, J. A. 1877 A, ii, p. 327.
Baird, S. F. 1857 A, p. 597, pl. lviii, fig. 1.
Cope, E. D. 1869 E, p. 175.
1871 I, p. 93.
1899 A, p. 209.
Holmes, F. S. 1858 B.
Leidy, J. 1860 B, p. 113, pl. xxii, fig. 1.
1862 A.
1869 A, p. 403.
1889 H, p. 6.
Trouessart, E. L. 1898 A, p. 658.
Wheatley, C. M. 1871 B.
Recent; eastern United States. Pleistocene; Illinois, South Carolina, Pennsylvania, Virginia.

ORDER INSECTIVORA.

Allen, H. 1880 A.
Baur, G. 1885 K, p. 459.
Blainville, H. M. D. 1864 A, i, H, pls. i-xi.
Cope, E. D. 1874 B, pp. 464, 472.
1876 A.
1877 K, pp. 85, 153.
1880 B, p. 455.
1883 I, p. 78.
1884 O, pp. 185, 197, 739.
1885 K.
1887 S, p. 343.
1888 D.
1891 N, p. 72.
1898 B, p. 115.
Dobson, G. E. 1883 A.
Flower, W. H. 1876 B, xiii, p. 514.
1883 A.
1883 D, p. 400.
1885 A.
Flower and Lydekker 1891 A, p. 610.
Gadow H. 1898 A, p. 51.
Gill, T. 1872 A, p. 303.
1872 B, pp. 18, 49.
1875 A.
1883 B.
Gill and Coues 1877 A, p. 1058.
Haeckel, E. 1895 A, pp. 578, 580.
Hay, O. P. 1899 F, p. 682.
Huxley, T. H. 1870 A.
1872 A, p. 375.
Leche, W. 1880 A.
1893 A.
1896 A, p. 286.
1897 A.
1897 B.
Leidy, J. 1871 C, p. 364.
Lydekker, R. 1885 B, p. 14.
1896 B.
Marsh, O. C. 1877 E.
Meyer, O. 1885 A, p. 229.
Mivart, St. G. 1867 B.
1867 C.
1868 A.
1871 A.
Nicholson and Lydekker 1889 A, p. 1454.
Osborn, H. F. 1888 G, p. 260.
1893 D.
1898 A, p. 146.
1899 B, p. 94.
1900 C, p. 566.
Owen, R. 1843 A, p. 57.
1845 B, p. 412.
1866 B, p. 385.
1868 A, p. 301.
Parker, W. K. 1868 A, p. 210.
1885 A, p. 125.
1886 A.
Parsons, F. G. 1899 A.
1900 A.
Paulli, S. 1900 B, p. 484.
Pomel, A. 1848 C, p. 246.
Ryder, J. A. 1878 A, p. 49.
Schlosser, M. 1886 C.
1887 B, p. 80.
1888 A.
1890 A.
1890 C.
1890 D.
Scott, W. B. 1892 A, p. 422.
Slade, D. D. 1888 A, p. 242.
1892 A.
Steinmann and Döderlein 1890 A, p. 709.
Tomes, C. S. 1898 A, p. 481.
Tornier, G. 1890 A.
Trouessart, E. L. 1898 A, p. 166.
Weyhe, — 1875 A, p. 104.
Woodward, M. F. 1896 A.
Wortman, J. L. 1886 A, p. 417.
Zittel, K. A. 1893 B, pp. 557, 571, 727.

TALPIDÆ.

Baird, S. F. 1857 A, p. 57.
Bate, C. S. 1867 A, p. 377. (Genus Talpa.)
Blainville, H. M. D. 1864 A, i, H, pls. i, v, vii, viii, ix. (Genus Talpa.)
Cope, E. D. 1883 I, p. 80.
Flower, W. H. 1883 D, p. 403.
1885 A.
Flower and Lydekker 1891 A, p. 628.
Dobson, G. E. 1883 A, p. 126.
Gill, T. 1872 B, p. 18.
1875 A.
Kober, J. 1882 A.
1884 A.
Leche, W. 1895 A, p. 50.
Mivart, St. G. 1867 B.
Mivart, St. G. 1867 C, i, p. 286; ii, p. 150.
1871 A, p. 75.
Moseley and Lankaster 1868 A.
Nicholson and Lydekker 1889 A, p. 1458.
Owen, R. 1868 A, p. 303.
Parker, W. K. 1868 A, p. 210, pl. xxvii, figs. 1-17.
1885 B, p. 378.
Pomel, A. 1848 C, p. 246. (Talpina.)
Roger, O. 1896 A, p. 23.
Schlosser, M. 1887 B, p. 125.
Tomes, C. S. 1898 A, p. 491. (Genus Talpa.)
Trouessart, E. L. 1898 A, p. 203.
True, F. W. 1896 A, p. 18.
Woodward, M. F. 1896 A, p. 575.
Zittel, K. A. 1893 B, p. 563.

SCALOPS[1] Cuvier. Type *Sorex aquaticus* Linn.

Baird, S. F. 1857 A, p. 58.
Dobson, G. E. 1883 A, p. 159.
Flower and Lydekker 1891 A, p. 630.
Leche, W. 1895 A, p. 50.
Mivart, St. G. 1867 B, p. 281.
  1867 C, i, p. 311; ii, p. 151.
  1871 A, p. 77.
Owen, R. 1868 A, p. 303.
True, F. W. 1896 A, pp. 7, 19.
Zittel, K. A. 1893 B, p. 565.

Scalops sp. indet.

Cope, E. D. 1871 I, p. 95.
  Pleistocene; Pennsylvania.

TALPAVUS Marsh. Type *T. nitidus* Marsh.

Marsh, O. C. 1872 G, p. 128.
  1877 E.
Nicholson and Lydekker 1889 A, p. 1458.
Schlosser, M. 1887 B, p. 143.
Zittel, K. A. 1893 B, p. 564.

Talpavus nitidus Marsh.

Marsh, O. C. 1872 G, p. 128.
King, C. 1878 A, p. 403.
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 23.
Trouessart, E. L. 1898 A, p. 208.
  Eocene (Bridger); Wyoming.

SORICIDÆ.

Baird, S. F. 1857 A, p. 7.
Blainville, H. M. D. 1864 A, i, H, pls. ii, v, vii, viii, ix, x. (Genus Sorex.)
Brandt, E. 1868 A, p. 76, pls i-vi. (Genus Sorex.)
  1870 A, p. 1. (Genus Sorex.)
Flower, W. H. 1883 D, p. 403.
Flower and Lydekker 1891 A, p. 621.
Gervais, P. 1859 A, p. 54.
Giebel, C. G. 1852 A, p. 222. ("Spitzmäuse.")
Gill, T. 1872 B, p. 18.
  1875 A.
Gill and Coues 1877 A, p. 1058.
Leche, W. 1895 A, p. 47.
Merriam, C. H. 1895 C.
Mivart, St. G. 1867 C, p. 289. (Genus Sorex.)
Nicholson and Lydekker 1889 A, p. 1457.
Owen, R. 1868 A, p. 305.
Parker, W. K. 1868 A, p. 210, pl. xxviii, fig. 1-7.
  1885 B, p. 378.
Peters, W. 1852 A, p. 220. ("Spitzmäuse.")
Pomel, A. 1848 C, p. 248. ("Soriciens.")
Roger, O. 1896 A, p. 25.
Schlosser, M. 1887 B, p. 120.
Wortman, J. L. 1886 A, p. 426.
Zittel, K. A. 1893 B, p. 567.

PROTOSOREX Scott. Type *P. crassus* Scott.

Scott, W. B. 1894 A, p. 446.

Protosorex crassus Scott.

Scott, W. B. 1894 A, p. 446.
Matthew, W. D. 1899 A, p. 55.
Roger, O. 1896 A. p. 25.
Trouessart, E. L. 1898 A, p. 186.
  Oligocene (White River); South Dakota.

BLARINA Gray. Type *Sorex talpoides* Gapper=*S. brevicaudus* Say.

Gray, J. E., 1837, Proc. Zool. Soc. Lond., p. 124.
Baird, S. F. 1857 A, p. 36.
Merriam, C. H. 1895 B, pp. 5, 9.

For synonomy of this genus see Merriam as quoted.

Blarina simplicidens Cope.

Cope, E. D. 1899 A, p. 219, text figure.
  Pleistocene; Pennsylvania.

LEPTICTIDÆ.

Cope, E. D. 1882 E, pp. 156, 157.
  1884 O, p. 259.
  1884 S, p. 347.
  1886 L, p. 966.
Gill, T. 1872 B, p. 19.
Matthew, W. D. 1899 A, p. 55.
Nicholson and Lydekker 1889 A, p. 1459.
Roger, O. 1896 A, p. 22. (Ictopsidæ.)
Schlosser, M. 1886 C.
  1887 B, p. 140. (Ictopsidæ.)
Steinmann and Döderlein 1890 A, p. 710. (Ictopsidæ.)
Trouessart, E. L. 1898 A, p. 216. (Ictopsidæ.)
Zittel, K. A. 1893 B, p. 561. (Ictopsidæ.)

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[1] *Scalops aquaticus* has been reported by Dr. Leidy (1889 H, p. 5) from a cave in Pennsylvania in which a very large proportion of the animals found belong to species yet living in the vicinity.

ICTOPS Leidy. Type *I. dakotensis* Leidy.

Leidy, J. 1868 J, p. 316.
Cope, E. D. 1881 D, p. 192.
1882 E, p. 157.
1884 O, pp. 259, 265, 801.
1884 S, pp. 352, 478.
Leidy, J. 1871 C, p. 364.
Schlosser, M. 1887 B, p. 141.
Scott, W. B. 1892 A, p. 422.
Trouessart, E. L. 1898 A, p. 216.
Zittel, K. A. 1893 B, p. 216.

Ictops bullatus Matth.

Matthew, W. D. 1899 A, p. 55.
Oligocene (White River); South Dakota.

Ictops dakotensis Leidy.

Leidy, J. 1868 J, p. 316.
Cope, E. D. 1884 O, pp. 266, 800.
King, C. 1878 A, p. 412.
Leidy, J. 1869 A, pp. 351, 408, pl. xxvi.
1871 C, p. 364.
Matthew, W. D 1899 A, p. 55.
Roger, O. 1896 A, p. 22.
Scott, W. B. 1892 A, p. 423.
Trouessart, E. L. 1898 A, p. 216.
Oligocene (White River); South Dakota.

Ictops didelphoides Cope.

Cope, E. D. 1881 D, p. 192.
1884 O, p. 268, pl. xxv*a*, fig. 9.
Matthew, W. D. 1899 A, p. 35. (Palæictops?.)
Roger, O. 1896 A, p. 22.
Schlosser, M. 1887 B, p. 142.
Trouessart, E. L. 1898 A, p. 216.
Eocene (Wind River); Wyoming.

PALÆICTOPS Matth. Type *Ictops bicuspis* Cope.

Matthew, W. D. 1899 A, p. 31.

Palæictops bicuspis (Cope).

Cope, E. D. 1880 N, p. 746. (Stypolophus.)
1881 D, p. 192. (Ictops.)
1882 E, p. 160. (Ictops.)
1884 O, p. 266, pl. lviii*f*, figs. 2, 3. (Ictops.)
Cope, E. D. 1884 S, p. 478, fig. 21. (Ictops.)
Matthew, W. D. 1899 A, p. 31.
Roger, O. 1896 A, p. 22. (Ictops.)
Trouessart, E. L. 1898 A, p. 216. (Ictops.)
Zittel, K. A. 1893 B, p. 561, fig. 470. (Ictops.)
Eocene (Wasatch); Wyoming.

LEPTICTIS Leidy. Type *L. haydeni* Leidy.

Leidy, J. 1868 J, p. 315.
Bruce, A. T. 1883 A, p. 43, fig. 9.
Cope, E. D. 1874 B, p. 472.
1882 E, p. 157.
1884 O, pp. 260, 801.
1884 S, p. 352.
1886 L, p. 966.
Leidy, J. 1871 C, p. 364.
Schlosser, M. 1887 B, p. 141.
Scott, W. B. 1892 A, p. 422.
Wortman, J. L. 1893 A.
Zittel, K. A. 1893 B, p. 562.

Leptictis haydeni Leidy.

Leidy, J. 1868 J, p. 315.
Cope, E. D. 1884 O, p. 800.
1884 S, p. 478, fig. 22.
King, C. 1878 A, p. 412.
Leidy, J. 1869 A, pp. 345, 408, pl. xxvi, figs. 25-28.
1871 C, p. 364.
Matthew, W. D. 1899 A, p. 55.
Roger, O. 1896 A, p. 22.
Schlosser, M. 1887 B, p. 141.
Zittel, K. A. 1893 B, p. 562, fig. 471.
Oligocene (White River); South Dakota.

MESODECTES Cope. Type *M. caniculus* Cope.

Cope, E. D. 1875 C, p. 30.
1873 T, p. 3. (Isacis, preoccupied.)
1873 CC, p. 5. (Isacis.)
1874 B, pp. 465, 470. (Isacis.)
1882 E, p. 157.
1884 O, pp. 259, 788, 801.
1884 S, p. 352.
Matthew, W. D. 1899 A, p. 55.
Scott, W. B. 1892 A, p. 423.
Zittel, K. A. 1893 B, p. 562.

Mesodectes caniculus Cope.

Cope, E. D. 1873 T, p. 3. (Isacis.)
1873 CC, p. 8. (Isacis.)
1874 B, p. 473. (Isacis.)
1874 P, p. 23. (Isacis.)
1884 O, p. 805, pl. lxii, figs. 33-50.
1884 S, p. 478.
Matthew, W. D. 1899 A, p. 55.
Roger, O. 1896 A, p. 22.
Trouessart, E. L. 1898 A, p. 216.
Oligocene (White River); Colorado.

GEOLABIS Cope. Type *G. rhynchæus* Cope.

Cope, E. D. 1884 O, p. 807.
Schlosser, M. 1887 B, p. 142.
Zittel, K. A. 1893 B, p. 562.

Geolabis rhynchæus Cope.

Cope, E. D. 1884 O, p. 808, pl. lxii, figs. 30-32.
Cope, E. D. 1874 B, p. 479, fig. 22. (Domnina sp.)
Matthew, W. D. 1899 A, p. 55.
Roger, O. 1806 A, p. 22.
Trouessart, E. L. 1898 A, p. 217.
Oligocene (White River); Colorado.

Diacodon Cope. Type *D. alticuspis* Cope.

Cope, E. D. 1875 C, p. 11.
1876 A, p. 3.
1877 K, p. 133.
1882 E, p. 157.
1884 O, pp. xxxv. 260, 713.
1884 S, p. 349.
Schlosser, M. 1887 B, p. 142. (Syn. of Centetodon Marsh.)
Zittel, K. A. 1893 B, p. 562.

Diacodon alticuspis Cope.

Cope, E. D. 1875 C, p. 12.
1877 K, p. 132, pl. xlv, fig. 19.
1884 S, p. 350, fig. 18*a*.
Matthew, W. D. 1899 A, p. 31.
Roger, O. 1896 A, p. 22.
Trouessart, E. L. 1898 A, p. 217.
Eocene (Wasatch); New Mexico.

Diacodon celatus Cope.

Cope, E. D. 1875 C, p. 12.,
1877 K, p. 133, pl. xlv, fig. 20.
1884 S, p. 350, fig. 18*b*.
Matthew, W. D. 1899 A, p. 31.
Roger, O. 1896 A, p. 22.
Trouessart, E. L. 1893 B, p. 217.
Eocene (Wasatch); New Mexico.

Centetodon Marsh. Type *C. pulcher* Marsh.

Marsh, O. C. 1872 I, p. 209.
Schlosser, M. 1887 B, p. 144.
Zittel, K. A. 1893 B, p. 362.

Centetodon altidens Marsh.

Marsh, O. C. 1872 I, p. 214.
Matthew, W. D. 1899 A, p. 41.
Roger, O. 1896 A, p. 23.
Trouessart, E. L. 1898 A, p. 217.
Eocene (Bridger); Wyoming.

Centetodon pulcher Marsh.

Marsh, O. C. 1872 I, p. 209.
King, C. 1878 A, p. 403.
Matthew, W. D. 1899 A, p. 41.
Roger, O. 1896 A, p. 22.
Trouessart, E. L. 1898 A, p. 217.
Eocene (Bridger); Wyoming.

Passalacodon Marsh. Type *P. litoralis* Marsh.

Marsh, O. C. 1872 I, p. 208.
Schlosser, M. 1887 B, p. 143.
Zittel, K. A. 1887 B, p. 562.

Passalacodon litoralis Marsh.

Marsh, O. C. 1872 I, p. 208.
King, C. 1878 A, p. 403.
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 23.
Trouessart, E. L. 1893 B, p. 217.
Eocene (Bridger); Wyoming.

Anisacodon Marsh. Type *A. elegans* Marsh.

Marsh, O. C. 1872 I, p. 209.
Schlosser, M. 1887 B, p. 143.
Zittel, K. A. 1893 B, pp. 304, 308, 562.

Anisacodon elegans Marsh.

Marsh, O. C. 1872 I, p. 209.
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 23.
Trouessart, E. L. 1898 A, p. 217.
Eocene (Bridger); Wyoming.

Centracodon Marsh. Type *C. delicatus* Marsh.

Marsh, O. C. 1872 I, p. 215.
Schlosser, M. 1887 B, p. 143.
A genus of uncertain position.

Centracodon delicatus Marsh.

Marsh, O. C. 1872 I, p. 215.
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 23.
Trouessart, E. L. 1898 A, p. 218.
Eocene (Bridger); Wyoming.

Entomodon Marsh. Type *E. comptus* Marsh.

Marsh, O. C. 1872 I, p. 214.
Schlosser, M. 1887 B, p. 143.
Zittel, K. A. 1893 B, p. 562.

Entomodon comptus Marsh.

Marsh, O. C. 1872 I, p. 214.
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 23.
Trouessart, E. L. 1898 A, p. 218.
Eocene (Bridger); Wyoming.

Entomacodon. Type *E. minutus* Marsh.

Marsh, O. C. 1872 I, p. 214.
1877 E.
Schlosser, M. 1887 B, p. 143.
Zittel, K. A. 1893 B, p. 562.

Entomacodon angustidens Marsh.

Marsh, O. C. 1872 I, p. 214.
King, C. 1878 A, p. 403.
Matthew, W. D. 1899 A, p. 42.
Roger, O, 1896 A, p. 23.
Trouessart, E. L. 1898 A, p. 218.
Eocene (Bridger); Wyoming.

Entomacodon minutus Marsh.

Marsh, O. C. 1872 I, p. 222.
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 23.
Schlosser, M. 1887 B, p. 143.
Trouessart, E. L. 1898 A, p. 218.
Eocene (Bridger); Wyoming.

Euryacodon Marsh. Type *E. lepidus* Marsh.

Marsh, O. C. 1872 I, p. 223.
Schlosser, M. 1887 B, p. 218.

Euryacodon lepidus Marsh.

Marsh, O. C. 1872 I, p. 223.
Matthew, W. D. 1899 A, p. 42.
Roger, O. 1896 A, p. 23.
Trouessart, E. L. 1898 A, p. 218.
Eocene (Bridger); Wyoming.

Anomodon Le Conte. Type *A. snyderi* Le Conte.

Le Conte, J. L. 1848 A, p. 106.

The position of this genus is doubtful. Roger and Trouessart (*loc. cit. infra*) assigned it to the Erinaceidæ.

Anomodon snyderi Le Conte.

Le Conte, J. L. 1848 A, p. 106, fig. 3.
Cope, E. D. 1869 E, p. 175.
Leidy, J. 1856 T, p. 171, pl. xvii, figs. 25, 26.
1862 A.
1869 A, p. 408.
1870 H, p. 13.
Pictet, F. J. 1853 A, p. 179.
Roger, O. 1896 A, p. 27.
Trouessart, E. L. 1898 A, p. 178.
Pleistocene; northern Illinois.

Domnina Cope. Type *D. gradata* Cope.

Cope, E. D. 1873 T, p. 1.
1873 CC, p. 4 (Domnina); p. 5 (Miothen, type *M. crassigenis*).
1874 B, pp. 465, 469, 470.
1884 O, pp. 788, 810.
Matthew, W. D. 1899 A, p. 55.
Nicholson and Lydekker 1889 A, p. 1463.
Schlosser, M. 1887 D, p. 78.
Zittel, K. A. 1893 B, p. 562 (Syn.? of Geolabis); p. 578.

The relationships of this genus are doubtful.

Domnina crassigenis Cope.

Cope, E. D. 1873 CC, p. 8. (Miothen.)
1874 B, p. 470.
Cope, E. D. 1884 O, p. 811, pl. lxii, figs. 24-29.
Matthew, W. D. 1899 A, p. 55.
Roger, O. 1896 A, p. 30.
Trouessart, E. L. 1898 A, p. 106.
Oligocene (White River); Colorado.

Domnina gradata Cope.

Cope, E. D. 1873 T, p. 1.
1873 CC, p. 8.
1874 B, p. 469.
1884 O, p. 810, pl. lxii, figs. 25, 26.
Matthew, W. D. 1899 A, p. 55.
Roger, O. 1896 A, p. 30.
Trouessart, E. L. 1898 A, p. 106.
Oligocene (White River); Colorado.

Order CHIROPTERA.

Allen, H. 1880 A.
1882 A.
1886 A.
1893 A.
Blainville, H. M. D. 1864 A, i, G, pls. i-xv.
Cope, E. D. 1873 E, p. 644.
1880 B, p. 455.
1884 O, p. 167.
1888 D, p. 255.
1889 C, p. 143.
1889 R, pp. 875, 876.
Dobson, G. E. 1878 A.
Flower, W. H. 1876 B, xiii, p. 514.
1883 A.
1883 D, p. 405.
1885 A.
Flower and Lydekker 1891 A, p. 641.
Gadow, H. 1898 A, p. 52.
Gill, T. 1872 A, p. 302.
1872 B, pp. 16, 49.
Gill and Coues 1877 A, p. 1055.
Gruber, W. 1859 A.
Haeckel, E. 1895 A, pp. 593, 595.
Hay, O. P. 1899 F, p. 682.
Huxley, T. H. 1870 A, p. 440.
1872 A, p. 385.
Leboucq, H. 1896 A.
Leche, W. 1877 A.
1895 A, p. 74.
Lydekker, R. 1896 B.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1459.

Osborn, H. F. 1893 A, p. 387.
1893 D, p. 12.
Owen, R. 1843 A, p. 56.
1845 B, p. 424.
Parker, W. K. 1868 A, p. 214.
1885 A, p. 188.
1886 A.
Roger, O. 1896 A, p. 28.
Ryder, J. A. 1878 A, p. 48.
Schlosser, M. 1887 B, p. 55.
Schlosser, M. 1889 A.
1890 A.
1890 C, p. 269.
Slade, D. D. 1888 A, p. 242.
Tomes, C. S. 1898 A, p. 496.
Trouessart, E. L. 1898 A, p. 77.
Weyhe, —1875 A, p. 102.
Winge, H. 1893 A.
1893 B.
Zittel, K. A. 1893 B, pp. 572, 729.

VESPERTILIONIDÆ.

Allen, H. 1893 A, p. 53.
Blainville, H. M. D. 1864 A, i, G, p. 71.
Flower, W. H. 1883 D, p. 410.
Flower and Lydekker 1891 A, p. 660.
Miller, G. S. 1897 A.
Nicholson and Lydekker 1889 A, p. 1461.
Roger, O. 1896 A, p. 28.
Trouessart, E. L. 1898 A, p. 103.
Winge, H, 1893 A, p. 34.
1893 B, p. 82.
Zittel, K. A. 1893 B, p. 577.

PIPISTRELLUS Kaup. Type *Vespertilio pipistrellus* Schreber.

Allen, H. 1893 A, p. 121. (Vesperugo.)
Cope, E. D. 1884 O, p. 373. (Vesperugo.)
Dobson, G. E. 1878 A, p. 183. (Vesperugo, part.)
Flower and Lydekker 1891 A, p. 661. (Vesperugo, part.)
Miller, G. S. 1897 A, p. 87. (Pipistrellus.)
Nicholson and Lydekker 1889 A, p. 1461. (Vesperugo.)
Zittel, K. A. 1893 B, p. 578. (Vesperugo.)

Pipistrellus anemophilus (Cope).

Cope, E. D. 1880 N, p. 745. (Vesperugo.
1881 D, p. 184. (Vesperugo.)
1884 O, p. 374. (Vesperugo.)
Matthew, W. D. 1899 A, p. 35. (Vesperugo.)
Roger, O. 1896 A, p. 29. (Vesperugo.)
Trouessart, E. L. 1898 A, p. 115. (Vesperugo.)
Eocene (Wind River); Wyoming.

VESPERTILIO Linn. Type *V. murinus* Linn.

Linnæus, C., 1858, Syst. Nat., ed. 10, i, p. 31.
Allen, H. 1893 A, p. 111. (Adelonycteris.)
Dobson, G. E. 1878 A, p. 183. (Vesperugo, part.)
Flower and Lydekker 1891 A, p. 661. (Vesperugo, in part.)
Miller, G. S. 1897 A, p. 95.

Vespertilio fuscus Beauvois.

Beauvois, 1796, Cat. Peale's Mus., p. 14.
Allen, H. 1893 A, p. 112. (Adelonycteris.)
Dobson, G. E. 1878 A, p. 193. [Vesperugo (Vesperus).]
Leidy, J. 1889 H, p. 5[1].
Mercer, C. H. 1897 A. (Adelonycteris.)
Miller, G. S. 1897 A, p. 96, fig. 24, *b*.
Trouessart, E. L. 1898 A, p. 106. [Vesperugo (Vesperus).]
Recent; Georgia to California and northward.
Pleistocene?; cave in Tennessee.

NYCTITHERIUM Marsh. Type *N. velox* Marsh.

Marsh, O. C. 1872 G, p. 127.
1877 E.
Miller, G. S. 1897 A, p. 16.
Nicholson and Lydekker 1889 A, p. 1461. (Syn. of Vesperugo.
Zittel, K. A. 1893 B, p. 578.

Nyctitherium priscum Marsh.

Marsh, O. C. 1872 G, p. 128.
King, C. 1878 A, p. 403.
Matthew, W. D. 1899 A, p. 42.
Miller, G. S. 1897 A, p. 33.
Trouessart, E. L. 1898 A, p. 106.
Eocene (Bridger); Wyoming.

Nyctitherium velox Marsh.

Marsh, O. C. 1872 G, p. 127.
King, C. 1878 A, p. 403.
Matthew, W. D. 1899 A, p. 42.
Miller, G. S. 1897 A, p. 37.
Roger, O. 1896 A, p. 30.
Trouessart, E. L. 1898 A, p. 106.
Eocene (Bridger); Wyoming.

NYCTILESTES Marsh. Type *N. serotinus* Marsh.

Marsh, O. C. 1872 I, p. 215.
1877 E.
Miller, G. S. 1897 A, p. 16.
Nicholson and Lydekker 1889 A, p. 1461.
Zittel, K. A. 1893 B, p. 578.

Nyctilestes serotinus Marsh.

Marsh, O. C. 1872 I, p. 215.
King, C. 1878 A, p. 403.
Matthew, W. D. 1899 A, p. 42.
Miller, G. S. 1897 A, p. 35.
Roger, O. 1896 A, p. 30.
Trouessart, E. L. 1898 A, p. 106.
Eocene (Bridger); Wyoming.

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[1] *V. subulatus* has been reported by Dr. Leidy (loc. cit.) from the same cave.

Order FERÆ Linnæus.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 37.
Unless otherwise indicated, the following authors apply the name *Carnivora* to this order.
Albrecht, P. 1879 A.
Allen, J. A. 1880 A.
Ameghino, F. 1889 A, p. 295.
Baird, S. F. 1857 A, p. 78.
Baur, G. 1890 B.
Blainville, H. M. D. 1864 A, ii, with 117 plates.
Cope, E. D. 1873 E, p. 646.
1875 C, p. 25.
1876 A.
1879 G.
1880 B, p. 455.
1881 J, p. 545.
1884 E.
1884 O, pp. 263, 888.
1887 S, pp. 264, 843.
1888 D.
1888 I, p. 6.
1889 C.
1889 R, p. 875.
Cuvier, G. 1834 A, v, p. 486; vii.
Filhol, H. 1883 A.
Flower, W. H. 1869 A, p. 269.
1869 B, p. 4.
1876 B, xiii, p. 487.
1883 D, p. 432.
1885 A.
Flower and Lydekker 1891 A, p. 496.
Gadow, H. 1898 A, p. 50.
Gill, T. 1872 A, p. 297. (Feræ.)
1872 B, pp. 47, 56. (Feræ.)
Gaudry, A. 1878 B, p. 209.
Gray, J. E. 1869 A, p. 2.
Gruber, W. 1859 A.
Haeckel, E. 1895 S, pp. 578, 584.
Hay, O. P. 1899 F, p. 682.
Humphreys, J. 1889 A, p. 142.
Huxley, T. H. 1872 A, p. 350.
Kittl, E. 1887 A.
Kollmann, J. 1888 A.
Lydekker, R. 1885 B, p. 20.
1896 B.
Marsh, O. C. 1877 E.
Mivart, St. G. 1881 A, p. 473.
Osborn, H. F. 1900 C, p. 568.
1892 I.
Owen, R. 1845 B, p. 473.
1851 C, p. 729.
1866 B, p. 487.
1868 A, p. 327.
Parker, W. K. 1868 A, p. 215.
1885 A, p. 198.
Parsons, F. G. 1899 A.
1900 A.
Paulli, S. 1900 B, p. 489.
Scheidt, P. 1894 A.
Schlosser, M. 1886 C.
1888 B.
1889 A.
1890 A.
1890 C.
1890 D.
1892 A, p. 217.
Scott, W. B. 1888 A.
1892 A, p. 424.
Slade, D. D. 1888 A, p. 243.
Steinmann and Döderlein 1890 A, p. 716.
Tims, H. W. M. 1896 B, p. 461.
Tomes, C. S., 1898 A, p. 459.
Turner, H. N. 1848 A.
Waterhouse, G. R. 1839 A.
Weber, M. 1886 A, p. 227.
Weyhe, — 1875 A, p. 116.
Winge, H. 1895 B. (Carnivora vera.)
Woodward, A. S. 1895 H, p. 380.
Wortman, J. L. 1886 A, p. 448.
Wortman and Matthew 1899 A, p. 109.
Zittel, K. A. 1893 B, pp. 578, 606, 678, 731.

Suborder CREODONTA Cope.

Cope, E. D. 1876 A, p. 3.
Ameghino, F. 1889 A, pp. 285, 293.
1891 C, p. 214.
Cope, E. D. 1875 C, p. 23. (Bunotheriidæ, in part.)
1876 E. (Bunotheria, in part.)
1877 K, p. 72 (Bunotheria, in part); pp. 85, 87 (Creodonta).
1877 S. (Bunotheria, in part.)
1880 C.
1881 S.
1882 E, p. 156.
1883 I (Bunotheria, in part); p. 78 (Creodonta).
1884 E.
1884 L.
1884 O, pp. 185, 251, 738 (Creodonta); pp. 167, 185, 737, 800 (Bunotheria, in part).
1884 S.
1885 U.
1886 L.
1887 M.
1887 S, p. 343.
Cope, E. D. 1888 D.
1888 K.
1888 CC, p. 308.
1889 C. (Bunotheria, in part; Creodonta.)
1889 R. (Bunotheria, in part; Creodonta.)
1891 N, p. 72. (Bunotheria, in part; Creodonta.)
1898 B, p. 114 (Creodonta); pp. 105, 114 (Bunotheria).
Earle, C. 1898 A, p. 261.
Flower and Lydekker 1891 A, p. 606.
Gadow, H, 1898 A, p. 50.
Hay, O. P. 1899 F, p. 682.
Ihering, H. 1891 A, p. 209.
Lemoine, V, 1880 A, p. 586.
Lydekker, R. 1885 E, p. 471.
1887 A, p. viii. (Bunotheria, in part.)
1900 A, p. 924.
Matthew, W. D. 1899 A, p. 28.
Nicholson and Lydekker 1889 A, p. 1449.
Osborn, H. F. 1888 F.
1892 I.

Osborn, H. F. 1893 D.
1894 A, p. 236. (Bunotheria, in part.)
1898 A, p. 146.
1898 H, p. 174.
1899 B, p. 93.
1900 C, p. 567.
Osborn and Wortman 1892 A, p. 103.
Roger, O. 1896 A, p. 30.
Rütimeyer, L. 1888 A.
1891 A, p. 98.
Schlosser, M. 1886 C.
1887 A.
1887 B, p. 162.
1888 A, p. 584.
1889 A.
1890 A.
1890 C.
1890 D.
Schlosser, M. 1892 A.
Scott, W. B. 1888 B.
1890 A.
1891 B, p. 366.
1892 A, p. 418.
1892 B.
1892 D.
1895 F, p. 719.
Slade, D. D. 1890 A.
Steinmann and Döderlein 1890 A, p. 711.
Trouessart, E. L. 1898 A, p. 219.
Winge, H. 1895 B, p. 46. (Carnivora primitiva.)
Woodward, A. S. 1898 B, p. 380.
Wortman, J. L. 1885 A, p. 298. (Bunotheria, in part; Creodonta.)
Wortman and Matthew 1899 A, p. 109.
Zittel, K. A. 1893 B, pp. 579, 605, 725.

OXYCLÆNIDÆ.

Scott, W. B. 1892 B, p. 294.
Earle, C. 1898 A, p. 261. (Chriacidæ.)
Matthew, W. D. 1897 C, p. 265 (Chriacidæ); p. 267 (Oxyclænidæ.)
1899 A, pp. 28, 29.
Osborn and Earle 1895 A, p. 20.
Roger, O. 1896 A, p. 32.
Scott, W. B. 1892 D, p. 77.
Trouessart, E. L. 1898 A, p. 219. (Includes Chriacidæ.)
Zittel, K. A. 1893 B, p. 584.

OXYCLÆNUS Cope. Type *Mioclænus cuspidatus* Cope.

Cope, E. D. 1884 K, p. 312.
1888 CC, p. 320, footnote.
Matthew, W. D. 1897 C, pp. 268, 276.
Scott, W. B. 1892 A, p. 419.
1892 B, p. 295.
1892 D, p. 77.
Zittel, K. A. 1893 B, p. 584.

Oxyclænus cuspidatus Cope.

Cope, E. D. 1884 K, p. 312. (Mioclænus, Oxyclænus.)
1888 CC, p. 321. (Mioclænus.)
Matthew, W. D. 1897 C, p. 276.
1899 A, p. 28.
Osborn and Earle 1895 A, p. 23. (Protochriacus simplex?.)
Roger, O. 1896 A, p. 32.
Scott, W. B. 1892 B, p. 295.
Trouessart, E. L. 1898 A, p. 219.
Eocene (Puerco); New Mexico.

Oxyclænus simplex Cope.

Cope, E. D. 1884 K, pp. 314, 315. (Chriacus.)
1888 CC, p. 336. (Chriacus.)
Matthew, W. D. 1897 C, p. 277, fig. 8.
1899 A, p. 28.
Roger, O. 1896 A, p. 249. (Protochriacus.)
Scott, W. B. 1892 B, p. 296. (Protochriacus.)
Eocene (Puerco); New Mexico.

CHRIACUS Cope. Type *Pelycodus pelvidens* Cope.

Cope, E. D. 1883 I, p. 80.
1884 K, p. 312.
1884 O, p. 740.
1884 S, p. 352.
1888 CC, p. 336.
Earle, C. 1898 A, p. 261.
Matthew, W. D. 1897 C, p. 272.
Osborn and Earle 1895 A, p. 21.
Schlosser, M. 1887 B, p. 49.
Scott, W. B. 1892 A, p. 421, fig. 4.
1892 B, p. 295 (Chriacus); p. 296 (Epichriacus, type *C. schlosserianus*).
1892 D, p. 77.
Steinmann and Döderlein 1890 A, p. 712.
Zittel, K. A. 1893 B, p. 585. (Chriacus, Epichriacus.)

Chriacus angulatus Cope.

Cope, E. D. 1875 C, p. 14. (Pelycodus.)
1877 K, p. 144, pl. xxxix, fig. 15. (Tomitherium.)
1882 E, p. 151. (Pelycodus.)
1883 I, p. 80. (Chriacus.)
1884 K, p. 314.
1884 O, pp. 225, 231, pl. xxivd, fig. 4 (Pelycodus); p. 740 (Chriacus).
1884 S, p. 353, fig. 14.
Matthew, W. D. 1899 A, p. 30. (Pelycodus.)
Roger, O. 1896 A, p. 250.
Scott, W. B. 1892 B, p. 296.
Trouessart, E. L. 1898 A, p. 220.
Eocene (Wasatch); New Mexico, Wyoming.

Chriacus baldwini Cope.

Cope, E. D. 1882 C, p. 463. (Deltatherium.)
1884 K, p. 314, in part. (C. pelvidens.)
1884 O, p. 282, pl. xxiii*d*, fig. 12 (Deltatherium); p. 225, in part, pl. xxiv*d*, fig. 3 (Pelycodus pelvidens).
1888 CC, pp. 304, 340, in part (C. baldwini); p. 304, in part (C. pelvidens).
Matthew, W. D. 1897 C, pp. 208, 274, figs. 5, 6.
1899 A, p. 29.
Osborn and Earle 1895 A, p. 21.
Roger, O. 1896 A, p. 250.
Scott, W. B. 1892 B, p. 296.
Trouessart, E. L. 1898 A, p. 220.
Eocene (Torrejon); New Mexico.

Chriacus pelvidens Cope.

Cope, E. D. 1881 Z, p. 1019. (Lipodectes.)
1882 C, p. 462. (Pelycodus.)
1882 E, p. 151. (Pelycodus.)
1883 I, p. 80.
1884 K, p. 313, part.
1884 O, p. 225, in part (Pelycodus); p. 740 (Chriacus).
1888 CC, pp. 304, 336, in part.
Matthew, W. D. 1897 C, pp. 263, 273, fig. 4.
1899 A, p. 29.
Roger, O. 1896 A, p. 250.
Trouessart, E. L. 1898 A, p. 220.
Eocene (Torrejon); New Mexico.

Chriacus schlosserianus Cope.

Cope, E. D. 1888 CC, p. 338.
Matthew, W. D. 1897 C, pp. 263, 268, 275.
1899 A, p. 29.
Roger, O. 1896 A, p. 249. (Epichriacus.)
Scott, W. B. 1892 A, p. 421. (Epichriacus.)
1892 B, p. 296. (Epichriacus.)
1892 D, p. 77. (Epichriacus.)
Trouessart, E. L. 1898 A, p. 220. (Epichriacus.)
Eocene (Torrejon); New Mexico.

Chriacus stenops Cope.

Cope, E. D. 1888 CC, p. 341.
Matthew, W. D., 1899 A, p. 29. (Syn. of C. pelvidens.)
Roger, O. 1896 A, p. 250.
Scott, W. B. 1892 A, p. 421.
1892 B, p. 296.
Trouessart, E. L. 1898 A, p. 220.
Eocene (Torrejon); New Mexico.

Chriacus truncatus Cope.

Cope, E. D. 1884 K, p. 313.
1888 CC, pp. 304, 336, fig. 8.
Matthew, W. D. 1897 C, pp. 263, 275, fig. 7.
1899 A, p. 29.
Roger, O. 1896 A, p. 250.
Trouessart, E. L. 1898 A, p. 220.
Eocene (Torrejon); New Mexico.

PENTACODON Scott. Type *Chriacus inversus* Cope.

Scott, W. B. 1892 B, p. 296.
1892 D, p. 77.
Zittel, K. A. 1893 B, p. 585.

Pentacodon inversus (Cope).

Cope, E. D. 1888 CC, p. 342. (Chriacus.)
Roger, O. 1896 A, p. 250.
Scott, W. B. 1892 B, p. 297.
Trouessart, E. L. 1898 A, p. 220.
Eocene (Puerco); New Mexico.

LOXOLOPHUS Cope. Type *L. adapinus* Cope=*Chriacus hyattianus* Cope.

Cope, E. D. 1885 J, p. 386.
Hay, O. P. 1899 A, p. 593.
Matthew, W. D. 1897 C, p. 268. (Protochriacus.)
Osborn and Earle 1895 A, p. 22.
Scott, W. B. 1892 B, p. 296 (Protochriacus, type *P. priscus*); p. 297 (Loxolophus).
1892 D, p. 77. (Protochriacus, Loxolophus.)
Zittel, K. A. 1893 B, p. 585. (Protochriacus, Loxolophus.)

Loxolophus attenuatus (Osb. and Earle).

Osborn and Earle 1895 A, p. 22. (Protochriacus.)
Matthew, W. D. 1897 C, pp. 263, 269. (Protochriacus.)
1899 A, p. 28.
Roger, O. 1896 A, p. 249. (Protochriacus.)
Trouessart, E. L. 1898 A, p. 220. (Protochriacus.)
Eocene (Puerco); New Mexico.

Loxolophus hyattianus (Cope).

Cope, E. D. 1885 J, p. 385 (Chriacus hyattianus); p. 386 (L. adapinus).
Cope, E. D. 1888 CC, pp. 304, 336. (Chriacus.)
Matthew, W. D. 1897 C, pp. 263, 268, 269, fig. 2. (Protochriacus.)
1899 A, p. 28. (Protochriacus hyattianus, Loxolophus adapinus.)
Roger, O. 1896 A, p. 249 (Protochriacus); p. 250 (Loxolophus).
Scott, W. B. 1892 B, p. 297.
Trouessart, E. L. 1898 A, p. 220.
Eocene (Puerco); New Mexico.

Loxolophus priscus (Cope).

Cope, E. D. 1888 CC, p. 337, text fig. 6. (Chriacus.)
Matthew, W. D. 1897 C, pp. 263, 269. (Protochriacus.)
1899 A, p. 28.
Osborn and Earle 1895 A, p. 22. (Protochriacus.)
Roger, O. 1896 A, p. 249. (Protochriacus.)
Scott, W. B. 1892 B, p. 296. (Protochriacus.)
Trouessart, E. L. 1898 A, p. 220. (Protochriacus.)
Zittel, K. A. 1893 B, p. 585, fig. 489. (Protochriacus.)
Eocene (Puerco); New Mexico.

TRICENTES Cope. Type *T. crassicollidens* Cope.

Cope, E. D. 1884 K, p. 315.
1884 O, p. xxxv.
1884 R, p. 60.
1884 S, p. 353.
1885 K, p. 464.
Matthew, W. D. 1897 C, p. 270.
Osborn and Earle 1895 A, p. 23.
Scott, W. B. 1892 B, p. 297.
1892 D, p. 77.
Zittel, K. A. 1893 B, p. 585.

Tricentes crassicollidens Cope.

Cope, E. D. 1884 K, p. 315.
1884 R, p. 61.
1888 CC, p. 304.
Matthew, W. D. 1897 C, pp. 263, 272.
1899 A, p. 29.
Roger, O. 1896 A, p. 250.
Trouessart, E. L. 1898 A, p. 221.
Eocene (Torrejon); New Mexico.

Tricentes subtrigonus Cope.

Cope, E. D. 1881 H, p. 491 (Mioclænus subtrigonus); p. 492 (Phenacodus zuniensis).
1883 M, p. 555. (Mioclænus subtrigonus, M. bucculentus.)
Cope, E. D. 1884 K, pp. 312, 315, 316.
1884 O, pp. 325, 328, pl. xxiv*f*, fig. 4; pl. lvii*f*, fig. 5 (M. subtrigonus); pp. 325, 341, pl. xxiv*g*, fig. 2 (M. bucculentus); pp. 433, 491, pl. lvii*f*, fig. 10 (Phenacodus zuniensis).
1884 R, p. 61. (Tricentes subtrigonus, T. bucculentus.)
1884 S, p. 349, fig. 17. (M. subtrigonus.)
1888 CC, pp. 303, 321 (M. subtrigonus); pp. 303, 336, fig. 7 (T. bucculentus); pp. 304, 340 (Chriacus baldwini, in part); pp. 305, 359 (Protogonia zuniensis, in part).
Matthew, W. D. 1897 C, pp. 263, 270, fig. 3; p. 310.
1899 A, p. 29.
Osborn and Earle 1895 A, p. 24. (Tricentes bucculentus.)
Roger, O. 1896 A, p. 165 (Euprotogonia zuniensis); p. 250 (Tricentes bucculentus, T. subtrigonus).
Schlosser, M. 1887 B, p. 221. (Mioclænus subtrigonus, M. bucculentus.)
Scott, W. B. 1892 B, pp. 297, 299.
Trouessart, E. L. 1898 A, p. 221. (T. bucculentus, T. subtrigonus.)
Eocene (Torrejon); New Mexico.

The above synonymy is based on Matthew, W. D., 1897 C.

ELLIPSODON Scott. Type *Tricentes inæquidens* (Cope.)

Scott, W. B. 1892 B, p. 298.
1892 D, p. 77.

Ellipsodon inæquidens (Cope).

Cope, E. D. 1884 K, p. 317. (Tricentes.)
1888 CC, pp. 304, 336, fig. 8 (Tricentes); p. 335 (Mioclænus minimus).
Matthew, W. D. 1897 C, pp. 263, 315, fig. 17. (Mioclænus.)
Roger, O. 1896 A, p. 250.
Scott, W. B. 1892 B, p. 298.
Trouessart, E. L. 1898 A, p. 221 (Ellipsodon); p. 719 (Mioclænus).
Eocene (Torrejon); New Mexico.

ARCTOCYONIDÆ.

Cope, E. D. 1877 K, p. 90.
1880 C, p. 78.
1882 E, pp. 156, 157.
1883 I, p. 78.
1884 O, p. 259.
1885 K, p. 469.
Flower and Lydekker 1891 A, p. 609.
Gill, T. 1872 B, pp. 59, 68.
Matthew, W. D. 1897 C, p. 288.
Osborn and Wortman 1892 A, p. 115.
Roger, O. 1896 A, p. 32.
Schlosser, M. 1887 B, p. 219.
Scott, W. B. 1892 A, p. 420.
1892 B, pp. 295, 298.
1892 D, pp. 77, 78.
Trouessart, E. L. 1898 A, p. 222.
Winge, H. 1895 B, pp. 46, 51.
Zittel, K. A. 1893 B, p. 586.

ARCTOCYON Blainv. Type *A. primævus* Blainv.

Blainville, H. M. D. 1864 A (1841), ii, L, p. 73.

No American species belonging to *Arctocyon* are known. The following citations are, however, given to the literature of the genus, since it is the type of the family.

Cope, E. D. 1880 C, p. 79.
1882 E, p. 157.
1884 O, p. 259.
Gaudry, A, 1878 B, p. 22.
Gervais, P. 1859 A, p. 220.
Lemoine, V. 1878 A.
1882 B.
1891 A, p. 272.
Osborn, H. F. 1883 A, p. 32.
1890 C, p. 59, fig. 4.
Schlosser, M. 1887 B, p. 221.
Trouessart, E. L. 1898 A, p. 222.
Winge, H. 1895 B, pp. 46, 91.
Woodward, A. S. 1898 B, p. 381.
Zittel, K. A. 1893 B, p. 586.

CLÆNODON Scott. Type *Mioclænus ferox* Cope.

Scott, W. B. 1892 B, p. 298.
Matthew, W. D. 1897 B, p. 232.
1897 C, p. 288.
1898 A, p. 880.
Osborn and Earle 1895 A, p. 26.
Scott, W. B. 1892 A, p. 420.
1892 D, p. 78.
Winge, H. 1895 B, pp. 46, 100, 101.
Zittel, K. A. 1893 B, p. 587.

Clænodon corrugatus (Cope).

Cope, E. D. 1883 M, p. 557. (Mioclænus.)
1883 W, p. 191. (M. meniscus, no description.)
1884 K, p. 312 (Mioclænus); p. 313 (Oxyclænus).
1884 O, pp. 325, 341, pl. xxiv*f*, fig. 5. (Mioclænus corrugatus); pl. xxiv*g*, fig. 8 (M. ferox).
1884 S, p. 349. (Mioclænus.)
1887 S, p. 275, pl. vii, fig. 1. (Mioclænus.)
1888 CC, p. 332. (Mioclænus.)
1889 C, p. 349. (Mioclænus).
Matthew, W. D. 1897 C, pp. 264, 290, 320.
1899 A, p. 29.
Roger, O, 1896 A, p. 32.
Schlosser, M. 1887 B, p. 221.
Scott, W. B. 1892 B, p. 299.
Trouessart, E. L. 1898 A, p. 223.
Zittel, K. A. 1893 B, p. 587, fig. 493.
Eocene (Torrejon); New Mexico.

Clænodon ferox (Cope).

Cope, E. D. 1883 M, p. 547. (Mioclænus.)
1884 K, p. 312 (Mioclænus): p. 313 (Oxyclænus.)
1884 O, pp. 325, 328, pl. xxiv*f*, figs. 6, 7, 9–15 (not fig. 8, *fide* Cope). (Mioclænus.)
1884 S, p. 350. (Mioclænus.)
1888 CC, pp. 308, 321. (Mioclænus.)
Matthew, W. D. 1897 C, pp. 264, 289, 320.
1899 A, p. 29.
Osborn and Earle 1895 A, p. 27.
Roger, O. 1896 A, p. 32.
Schlosser, M. 1887 B, p. 221.
Trouessart, E. L. 1898 A, p. 222.
Eocene (Torrejon); New Mexico.

Clænodon protogonioides (Cope).

Cope, E. D. 1882 EE, p. 833. (Mioclænus.)
1884 K, p. 312. (Mioclænus.)
1884 O, pp. 325, 340, pl. xxv, fig. 17. (Mioclænus.)
1888 CC, p. 329. (Mioclænus.)
Matthew, W. D. 1897 C, pp. 264, 291.
1899 A, p. 29.
Roger, O. 1896 A, p. 32.
Schlosser, M. 1887 B, p. 221. (Mioclænus.)
Scott, W. B. 1892 A, p. 420, fig. 4.
1892 B, p. 299.
Trouessart, E. L. 1898 A, p. 223.
Eocene (Puerco and Torrejon); New Mexico.

ANACODON Cope. Type *A. ursidens* Cope.

Cope, E. D. 1882 E, pp. 178, 181.
1882 F, p. 96.
1884 O, pp. 386, 427.
Osborn, H. F. 1893 D.
Osborn and Earle 1895 A, p. 27.
Osborn and Wortman 1892 A, p. 115.
Pavlow, M. 1887 A.
Scott, W. B. 1892 B, p. 300.
1892 D, p. 78.
Wortman, J. L. 1882 B, p. 775.
Zittel, K. A. 1893 B, p. 588.

Anacodon ursidens Cope.

Cope, E. D. 1882 E, p. 181.
1884 O, p. 427, pl. xxv*e*, fig. 11.
1884 AA, p. 900, fig. 23.
Matthew, W. D. 1899 A, p. 31.
Osborn and Wortman 1892 A, p. 115, fig. 131.
Roger, O. 1896 A, p. 33.
Trouessart, E. L. 1898 A, p. 223.
Eocene (Wasatch); Wyoming.

TRIISODONTIDÆ.

Scott, W. B. 1892 B, pp. 294, 300.
Matthew, W. D. 1897 C, p. 277.
1899 A, pp. 28, 29.
Roger, O. 1896 A, p. 33.
Scott, W. B. 1892 A, p. 421.
Scott, W. B. 1892 D, pp. 77, 78.
Trouessart, E. L. 1898 A, p. 223.
Wortman, J. L. 1899 A, p. 146. (Subfamily of Mesonychidæ.)
Zittel, K. A. 1893 B, p. 588.

TRIISODON Cope. Type *T. quivirensis* Cope.

Cope, E. D. 1881 S, p. 667.
1881 H, p. 484.
1882 E, p. 157.
1882 H, p. 299.
1884 K, p. 311.
1884 O, pp. 260, 270.
1884 S, p. 349.
1887 Q.
Matthew, W. D. 1897 C, p. 278.
Scott, W. B. 1892 A, p. 420.
1892 B, p. 300.
1892 D, p. 78.
Schlosser, M. 1887 B, p. 209.
Winge, H. 1895 B, pp. 46, 51.
Wortman, J. L. 1899 A, p. 147.
Zittel, K. A. 1893 B, p. 588.

Triisodon gaudrianus (Cope).

Cope, E. D. 1888 CC, pp. 303, 326. (Mioclænus.)
Matthew, W. D. 1897 C, p. 280.
1899 A, p. 28.
Roger, O. 1896 A, p. 33. (T. gaudryanus.)
Scott, W. B. 1892 B, p. 302. (Goniacodon.)
Trouessart, E. L. 1898 A, p. 224. (Goniacodon.)
Eocene (Puerco); New Mexico.

Triissodon heilprinianus Cope.

Cope, E. D. 1882 E, p. 193.
1882 C, p. 468. (Conoryctes crassicuspis.)
1884 K, p. 310 (T. rusticus); p. 311 (T. heilprinianus).
1884 O, p. 201, pl. xxiii*d*, fig. 6 (Conoryctes crassicuspis); pp. 271, 273, pl. xxviii*a*, fig. 2 (T. heilprinianus.)
1885 J, p. 386. (Sarcothraustes coryphæus.)
1888 CC, pp. 303, 321 [Mioclænus (Goniacodon) heilprinianus]; pp. 303, 321 (Mioclænus bathygnathus, M. rusticus); pp. 303, 323 (Mioclænus crassicuspis); pp. 304, 343 (T. biculminatus); p. 323, figs. 1–4 (Sarcothraustes coryphæus).
Matthew, W. D. 1897 C, pp. 263, 279, 320.
1899 A, p. 28.
Osborn and Earle 1895 A, p. 28, fig. 7 (T. biculminatus); p. 29 (Sarcothraustes coryphæus, S. crassicuspis).
Roger, O. 1896 A, p. 33 (T. heilprinranus, T. biculminatus, T. rusticus, Sarcothraustus coryphæus, S. bathygnathus); p. 34 (S. crassicuspis).
Schlosser, M. 1886 B, p. 37. (Zetodon crassicuspis.)
Scott, W. B. 1892 B, p. 300 (T. heilprinianus); p. 302 (Goniacodon rusticus); p. 303 (Sarcothraustes crassicuspis, S. bathygnathus).
1897 A, p. 3. (Miacis bathygnathus.)
Trouessart, E. L. 1898 A, p. 224 (T. heilprinianus); p. 223 (T. biculminatus); p. 224 (Sarcothraustes coryphæus); p. 225 (S. bathygnathus; S. crassicuspis).
Eocene (Puerco); New Mexico.
The above synonymy is based on Matthew, W. D., 1897 C.

Triisodon quivirensis Cope.

Cope, E. D. 1881 S. p. 667.
1881 G, p. 485.
1884 K, p. 311.
1884 O, pp. 271, 272, pl. xxv*c*, fig. 2.
1884 S, pp. 257, 350, fig. 1.
1888 CC, p 304.
Matthew, W. D. 1897 C, p. 279.
1899 A, p. 28.
Roger, O. 1896 A, p. 33.
Scott, W. B. 1892 B, p. 301.
Trouessart, E. L. 1898 A, p. 223.
Wortman, J. L. 1886 A, p. 423 fig. 205.
Eocene (Puerco); New Mexico.

GONIACODON Cope. Type *G. levisanus* Cope.

Cope, E. D. 1888 CC, pp. 320, 321. (Subgenus.)
Matthew, W. D. 1897 C, pp. 278, 281.
1899 A, p. 29.
Scott, W. B. 1892 B, p. 301.
1892 D, p. 78.
Zittel, K. A. 1893 B, p. 589.

Goniacodon levisanus (Cope).

Cope, E. D. 1883 M, p. 546. (Triisodon.)
1884 K, p. 311. (Triisodon.)
Cope, E. D. 1884 O, pp. 271, 273, pl. xxiv*f*, fig. 3. (Triisodon.)
1888 CC, pp. 303, 321. [Mioclænus (Goniacodon).]
Matthew, W. D. 1897 C, pp. 263, 282.
Roger, O. 1896 A, p. 33.
Scott, W. B. 1892 B, 302.
Trouessart, E. L. 1898 A, p. 224.
Eocene (Torrejon); New Mexico.

MICROCLÆNODON Scott. Type *Triisodon assurgens* Cope.

Scott, W. B. 1892 B, p. 302.
1892 D, p. 78.
Zittel, K. A. 1893 B, p. 589.

Microclænodon assurgens (Cope).

Cope, E. D. 1884 K, p. 311. (Triisodon.)
1884 S, p. 350. (Diacodon.)
Cope, E. D. 1888 CC. pp. 304, 321. [Mioclænus (Goniacodon).]
Roger, O. 1896 A, p. 33.
Scott, W. B. 1892 B, p. 302.
Trouessart, E. L. 1898 A, p. 224.
Eocene (Puerco); New Mexico.

SARCOTHRAUSTES Cope. Type *S. antiquus* Cope.

Cope, E. D. 1882 E, pp. 156, 193.
1884 O, pp. 260, 346.
1884 S, p. 267.
1888 D, p. 255.
Matthew, W. D. 1897 C, p. 282.
Osborn and Earle 1895 A, p. 28.
Schlosser, M. 1887 B, p. 207.
Scott, W. B. 1892 A, p. 421.
1892 B, p. 302.
1892 D, p. 78.
Winge, H. 1895 B, pp. 46, 51.
Zittel, K. A. 1893 B, p. 589.

Sarcothraustes antiquus Cope.

Cope, E. D. 1882 E, p. 193.
1882 H, p. 297. (Triisodon conidens.)
1884 K, p. 311. (Triisodon conidens.)
1884 O, pp. 271, 274, pl. xxiii*d*, figs. 9, 10 (Triisodon conidens); p. 347, pl. xxiv*d*, figs. 19–22 (S. antiquus).

Cope, E. D. 1884 S, p. 267 (S. antiquus); p. 350 (Diacodon conidens).
1888 CC, pp. 303, 320. (Mioclænus antiquus, M. conidens.)
Matthew, W. D. 1897 C, pp. 263, 283.
1899 A, p. 29.
Osborn and Earle 1895 A, p. 29.
Roger, O. 1896 A, p. 33.
Scott, W. B. 1893 B, p. 303.
Trouessart, E. L. 1898 A, p. 224.
Wortman, J. L. 1899 A, p. 146.
Eocene (Torrejon); New Mexico.

MESONYCHIDÆ.

Cope, E. D. 1876 A, p. 3.
1880 C, pp. 78, 79.
1882 E, pp. 157, 158.
1884 O, pp. 259, 260, 355.
1884 S, pp. 260, 261.
1888 CC, p. 310.
Matthew, W. D. 1897 C, p. 284.
Nicholson and Lydekker 1889 A, p. 1453.
Osborn, H. F. 1893 D.
Osborn and Wortman 1892 A, p. 112.
Roger, O. 1896 A, p. 34.
Schlosser, M. 1886 C.
Scott, W. B. 1888 B, p. 164.
1890 A, p. 472.
1892 A, p. 419.
1892 B, pp. 294, 303.
1892 D, pp. 77, 78.
Steinmann and Döderlein 1890 A, p. 712.
Winge, H. 1895 A, pp. 46, 49, 50. (Mesonychini.)
Wortman, J. L. 1899 A, p. 146. (With subfamilies Mesonychinæ and Trilssodontinæ.)
Zittel, K. A. 1893 B, p. 589.

DISSACUS Cope. Type *D. navajovius* Cope.

Cope, E. D. 1881 Z, p. 1019.
1882 E, p. 158.
1884 K, p. 324.
1884 O, pp. 260, 344, 741.
1884 S, p. 267.
1888 CC, p. 343.
Earle, C. 1898 A, p. 261.
Lemoine, V. 1891 A, p. 271.
Matthew, W. D. 1897 C, pp. 284, 308.
Nicholson and Lydekker 1889 A, p. 1453.
Osborn, H. F. 1893 B, p. 325.
Osborn and Earle 1895 A, p. 30.
Osborn and Wortman 1892 A, p. 112.
Schlosser, M. 1887 B, p. 209.
Scott, W. B. 1892 A, pp. 418, 420.
1892 B, p. 303.
1892 D, p. 78.
Winge, H. 1895 B, pp. 46, 49, 91, 100, 101.
Wortman, J. L. 1899 A, p. 147.
Zittel, K. A. 1893 B, p. 589.

Dissacus leptognathus Osb. and Wort.

Osborn and Wortman 1892 A, p. 112 (D. leptognathus); fig. 10 [? Dissacus (Pachyæna) leptognathus].
Matthew, W. D. 1899 A, p. 31.
Roger, O. 1896 A, p. 34.
Scott, W. B. 1892 B, p. 304.
Trouessart, E. L. 1898 B, p. 225.
Eocene (Wasatch); Wyoming.

Dissacus navajovius Cope.

Cope, E. D. 1881 H, p. 484. (Mioclænus.)
1881 Z, p. 1019.
1882 E, p. 165.
1882 EE, p. 834. (D. carnifex.)
1884 O, p. 345. pl. xxv*c*, fig. 1 (D. navajovius); pp. 345, 741, pl. xxiv*g*, figs. 3, 4 (D. carnifex).
1884 S, p. 267, fig. 11.
1888 CC, pp. 304, 344 (D. navajovius); p. 304 (D. carnifex).
Matthew, W. D. 1897 C, pp. 263, 284, 320.
1899 A, pp. 29, 31, footnote.
Osborn, H. F. 1898 H, p. 174, fig. 5. (D. carnifex.)
Roger, O. 1896 A, p. 34. (D. navajovius, D. carnifex.)
Trouessart, E. L. 1898 A, p. 225. (D. carnifex, D. navajovius.)
Wortman, J. L. 1886 A, p. 420, fig. 202.
Eocene (Torrejon); New Mexico.

Dissacus saurognathus Wort.

Wortman, J. L. in Matthew, W. D. 1897 C, pp. 263, 285, 320, fig. 9.
Matthew, W. D. 1899 A, p. 29.
Osborn and Earle 1895 A, p. 30, figs. 8, 9. (D. carnifex, not of Cope.)
Eocene (Torrejon); New Mexico.

PACHYÆNA Cope. Type *P. ossifraga* Cope.

Cope, E. D. 1874 O, p. 13.
1877 K, p. 94.
1881 Z, p. 1018.
1882 E, p. 165.
Earle, C. 1898 A, p. 261.
Matthew, W. D. 1897 C, p. 284.
1899 A, p. 31, footnote.
Osborn and Earle 1895 A, p. 38.
Scott, W. B. 1888 B, p. 165.
1892 A, p. 420.
1892 B, p. 304.
Scott, W. B. 1892 D, p. 79.
Winge, H. 1895 B, pp. 46, 49, 91, 100, 101.
Zittel, K. A. 1893 B, p. 590.

Pachyæna gigantea Osb. and Wort.

Osborn and Wortman 1892 A, p. 113, figs. 11, 12.
Matthew, W. D. 1899 A, p. 31.
Roger, O. 1896 A, p. 34.
Trouessart, E. L. 1898 A, p. 225.
Zittel, K. A. 1893 B, p. 590, fig. 495.
Eocene (Wasatch); Wyoming.

Pachyæna intermedia Wort.

Wortman, J. L. 1899 A, p. 147.
Matthew, W. D. 1899 A, p. 31. (No description.)
Eocene (Wasatch); Wyoming.

Pachyæna ossifraga Cope.

Cope, E. D. 1874 O, p. 13.
1875 C, p. 11.
1875 F, p. 94.
1877 K, p. 94, pl. xxxix, fig. 10.
1881 Z, p. 1018. (Mesonyx.)
1882 E, p. 165. (Mesonyx.)
1882 S, p. 334.
Cope, E. D. 1884 O, p. 362, pl. xxiv*e*, fig. 14–19; pl. xxviii*a*, fig. 1; pl. xxviii*b*; pl. xxviii*c*; pl. xxviii*d*. (Mesonyx.)
1884 S, p. 264, figs. 2, 6, 8, 10. (Mesonyx.)
King, C. 1878 A, p. 376.
Matthew, W. D. 1899 A, p. 31.
Osborn and Wortman 1892 A, p. 112.
Roger, O. 1896 A, p. 34.
Schlosser, M. 1887 B, p. 206.
Steinmann and Döderlein 1890 A, p. 714.
Trouessart, E. L. 1898 A, p. 225.
Wortman, J. L. 1886 A, p. 418, figs. 200, 201. (Mesonyx.)
1899 A, p. 147.
Eocene (Wasatch); New Mexico, Wyoming.

Mesonyx Cope. Type *M. obtusidens* Cope.

Cope, E. D. 1872 M, p. 460.
Allen, H. 1886 B.
Cope, E. D. 1872 R, p. 483. (Synoplotherium, type *S. lanius*.)
1872 HH.
1873 E, p. 550 (Mesonyx); p. 554 (Synoplotherium).
1873 G, p. 198 (Mesonyx); p. 203 (Synoplotherium).
1875 C, p. 5 (Mesonyx); p. 9 (Synoplotherium).
1875 L, p. 21.
1876 A, p. 1 (Synoplotherium); p. 3 (Mesonyx).
1880 C, p. 79.
1881 Z.
1882 E, p. 158.
1882 S, p. 334.
1884 O, pp. 260, 348.
1884 S, p. 263.
1887 S, pp. 251, 278.
Earle, C. 1898 A, p. 261.
Flower, W. H. 1876 B, xiii, p. 514.
Flower and Lydekker 1891 A, p. 609.
Major, Fors. 1893 A, p. 200.
Marsh, O. C. 1876 H, p. 403. (Dromocyon, type *D. vorax*.)
1877 E. (Dromocyon, Mesonyx.)
Matthew, W. D. 1897 C, p. 284.
Nicholson and Lydekker 1889 A, p. 1453.
Osborn, H. F. 1893 D, p. 6.
Osborn and Earle 1895 A, p. 37.
Schlosser, M. 1887 B, p. 206 (Synoplotherium); p. 207 (Mesonyx).
1890 B, p. 64.
Scott, W. B. 1888 B, p. 164 (Mesonyx); p. 165 (Synoplotherium).
1890 A, p. 472.
1892 A, p. 420.
1892 B, p. 306.
1892 D, p 79.
Steinmann and Döderlein 1890 A, p. 713.
Wilckens, M. 1885 D, p. 523. (Dromocyon.)
Winge, H. 1895 B, pp. 46, 49, 91.
Woodward, A. S. 1898 B, p. 382.
Wortman, J. L. 1886 A, p. 417.
Zittel, K. A. 1893 B, p. 590.

Mesonyx? dakotensis Scott.

Scott, W. B. 1892 B, p. 306.
Trouessart, E. L. 1898 A, p. 226.
Oligocene (White River); South Dakota.

Mesonyx lanius Cope.

Cope, E. D. 1872 R, p. 483. (Synoplotherium.)
1873 E, p. 557, pls. v, vi. (Synoplotherium.)
1873 G, p. 207. (Synoplotherium.)
1877 K, p. 94. (Synoplotherium.)
1884 O, pp. 264, 348, 358, pl. xxvii, figs. 25–28; pl. xxviii; pl. xxix, figs. 1–6; pl. xxix*a*, fig. 1.
1884 S, p. 265, fig. 7.
Matthew, W. D. 1899 A, p. 41.
Osborn and Wortman 1892 A, p. 113.
Roger, O. 1896 A, p. 34.
Trouessart, E. L. 1898 A, p. 226.
Eocene (Bridger); Wyoming.

Mesonyx obtusidens Cope.

Cope, E. D. 1872 M, p. 460.
1873 E, p. 552.
1873 G, p. 201.
1884 O, pp. 348, 355, pl. xxvi, figs. 3–12; pl. xxvii, figs. 1–24.
1884 S, p. 264.
1887 M.
Matthew, W. D. 1899 A, pp. 41, 49.
Osborn, H. F. 1896 C, p. 107, illus. 3.
1898 Q, p. 18.
Roger, O. 1896 A, p. 34.
Scott, W. B. 1888 B, p. 155, pl. v; pl. vi, fig. 1; pl. vii, figs. 1–3.
1892 B, p. 307.
Trouessart, E. L. 1898 A, p. 226.
Eocene (Bridger); Wyoming: (Uinta); Utah.

Mesonyx uintensis Scott.

Scott, W. B. 1888 B (1887), p. 168. (M.? uintensis.)
Cope, E. D. 1887 M, p. 927. (M. uintaensis.)
Matthew, W. D. 1899 A, p. 49.
Osborn, H. F. 1895 A, p. 79, fig. 4.
Roger, O. 1896 A, p. 34.
Scott, W. B. 1890 A, p. 471, pl. x, fig. 9.
Scott and Osborn 1887 A, p. 255. (Name only.)

Trouessart, E. L. 1898 A, p. 226.
Eocene (Uinta); Utah.

Mesonyx vorax (Marsh).

Marsh, O. C. 1876 H, p. 408. (Dromocyon.)
King, C. 1878 A, p. 403.
Matthew, W. D. 1899 A, p. 41.
Schlosser, M. 1890 B, p. 63. (Dromocyon.)
Scott, W. B. 1892 B, p. 306. (Syn. of Mesonyx obtusidens.)
Trouessart, E. L. 1898 A, p. 228. (Syn. of M. obtusidens.)
Eocene (Bridger); Wyoming.

PROVIVERRIDÆ.

Schlosser, M. 1886 C, p. 298.
Flower and Lydekker 1891 A, p. 608.
Lydekker, R. 1887 A, p. 307.
Matthew, W. D. 1899 A, pp. 31, 35, 40.
Nicholson and Lydekker 1889 A, p. 1452.
Roger, O. 1896 A, p. 34.
Scott, W. B. 1892 B, pp. 294, 307.
Scott, W. B. 1892 D, pp. 77, 79.
1894 F, p. 501.
Steinmann and Döderlein 1890 A, p. 712.
Trouessart, E. L. 1898 A, p. 226.
Winge, H. 1895 B, pp. 46, 48. (Proviverrini.)
Zittel, K. A. 1893 B, p. 592.

DELTATHERIUM Cope. Type *D. fundaminis* Cope.

Cope, E. D. 1881 N, p. 337.
1881 H, p. 486.
1881 Z, p. 1019. (Lipodectes, type *L. penetrans* Cope.)
1882 E, p. 157. (Deltatherium, Lipodectes.)
1884 O, pp. 260, 277.
1884 S, p. 352.
1888 D, p. 255.
Lydekker, R. 1887 A, p. 309.
Nicholson and Lydekker 1889 A, p. 1453.
Osborn and Earle 1895 A, p. 39.
Schlosser, M. 1887 A, p. 219.
1888 B, pp. 16, 23.
Scott, W. B. 1892 A, p. 418.
1892 B, p. 308.
1892 D, p. 79.
Trouessart, E. L. 1898 A, p. 227.
Winge, H. 1895 B, pp. 46, 49, 91, 101.
Zittel, K. A. 1893 B, p. 592.

Deltatherium fundaminis Cope.

Cope, E. D. 1881 N, p. 337.
1881 H, p. 486.
1881 Z, p. 1019. (Lipodectes penetrans.)
1882 C, p. 463.
Cope, E. D. 1882 X, p. 522.
1884 O, p. 278, pl. xxiii*e*, figs. 8-11; pl. xxv*a*, fig. 10; pl. xxv*d*, fig. 3.
1884 S, p. 352, fig. 20.
1888 D.
1888 CC, p. 304.
1889 C, p. 229, fig. 54.
Lydekker, R. 1887 A, p. 309.
Matthew, W. D. 1899 A, p. 29.
Osborn and Earle 1895 A, p. 40, figs. 10, 11.
Roger, O. 1896 A, p. 35.
Trouessart, E. L. 1898 A, p. 227.
Zittel, K. A. 1893 B, p. 593, fig. 497.
Eocene (Puerco); New Mexico.

Deltatherium? interruptum Cope.

Cope, E. D. 1882 C, p. 463.
1884 O, p. 282, pl. xxiii*d*, fig. 13.
1888 CC, pp. 303, 328. (Mioclænus.)
Matthew, W. D. 1899 A, p. 28. (Mioclænus.)
Roger, O. 1896 A, p. 164.
Scott, W. B. 1892 B, p. 323. (Genus not determined.)
Trouessart, E. L. 1898 A, p. 720.
Eocene (Puerco); New Mexico.

STYPOLOPHUS Cope. Type *S. pungens* Cope.

Cope, E. D. 1872 N, p. 466.
1872 E, p. 469. (Triacodon, not of Marsh.)
1873 E, p. 559 (Stypolophus); pp. 560, 611 (Triacodon).
1874 O, p. 13. (Prototomus, type *P. viverrinus*.)
1875 C, pp. 5, 9. (Prototomus.)
1875 L, p. 21. (Stypolophus.)
1876 A. (Stypolophus.)
1877 K, pp. 87, 109, 112. (Stypolophus.)
1879 A, p. 43. (Stypolophus.)
1880 C, p. 79. (Stypolophus.)
1882 E, p. 158 (Stypolophus); p. 164 (Prototomus).
1884 E. (Stypolophus.)
1884 O, pp. 35, 260, 285 (Stypolophus); p. 35 (Prototomus).
Cope, E. D. 1884 S, p. 350. (Stypolophus.)
1887 S, p. 251. (Stypolophus.)
1888 D. (Stypolophus.)
1889 C, p. 232. (Stypolophus.)
Leidy, J. 1871 F, p. 115. (Sinopa, type *S. rapax;* description insufficient.)
1872 B, p. 355.[1] (Sinopa.)
1873 B, p. 116. (Sinopa.)
Marsh, O. C. 1872 G, p. 126. (Limnocyon, type *L. verus*.)
1877 E.
Matthew, W. D. 1899 A, p. 31. (Sinopa.)
Nicholson and Lydekker, 1889 A, p. 1437. (Stypolophus=Proviverra; Limnocyon.)
Osborn, Scott, and Speir 1878 A, p. 18. (Sinopa.)
Schlosser, M. 1887 B, p. 218. (Stypolophus.)
1888 B, p. 16. (Stypolophus.)

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[1] In case this paper was issued before Cope 1872 N ("Aug. 3, 1872") *Sinopa* will replace *Stypolophus*.

Schlosser, M. 1890 C, p. 244. (Stypolophus.)
Scott, W. B. 1892 A, p. 419. (Sinopa.)
1892 B, p. 308. (Sinopa.)
1892 D, p. 79. (Sinopa.)
Trouessart, E. L. 1898 A, p. 227.
Wilckens, M. 1885 D, p. 524. (Sinopa.)
Winge, H. 1895 B, pp. 46, 47, 52, 91, 100, 101.
Woodward, A. S. 1898 B, p. 383.
Zittel, K. A. 1893 B, pp. 592. (Sinopa.)

Stypolophus aculeatus Cope.

Cope, E. D. 1872 M, p. 460. (Triacodon.)
1872 E, p. 469. (Triacodon.)
1873 E, pp. 560, 611. (Triacodon.)
1873 U, p. 3. (Triacodon.)
1877 K, p. 112.
1882 E, p. 161.
1884 O, pp. 290, 299, pl. xxiv, figs. 6, 7; pl. xxvii, figs. 1, 2.
Matthew, W. D. 1899 A, p. 31. (Sinopa.)
Roger, O. 1896 A, p. 35.
Scott, W. B. 1892 B, p. 310. (Sinopa.)
Trouessart, E. L. 1898 A, p. 227. (Sinopa.)
Eocene (Wasatch); New Mexico.

Stypolophus agilis (Marsh).

Marsh, O. C. 1872 I, p. 204. (Limnocyon.)
Matthew, W. D. 1899 A, p. 40. (Sinopa.)
Roger, O. 1896 A, p. 35 (S. agilis); p. 41 (Miacis? agilis).
Schlosser, M, 1890 B, p. 63. (Limnocyon.)
Scott, W. B. 1892 B, p. 310. (Sinopa.)
Trouessart, E. L. 1898 A, p. 227 (Sinopa); p. 236 (Miacis?).
Eocene (Bridger); Wyoming.

Stypolophus brevicalcaratus Cope.

Cope, E. D. 1872 E, p. 469. (S. brevicolcarabus, error.)
1873 E, p. 560.
1884 O, pp. 290, 291, pl. xxiv, fig. 9.
Matthew, W. D. 1899 A, p. 40. (Syn. of Sinopa agilis.)
Roger, O, 1896 A, p. 35.
Scott, W. B. 1892 B, p. 310. (Sinopa.)
rouessart, E. L. 1898 A, p. 227. (Sinopa.)
Eocene (Bridger), Wyoming.

Stypolophus hians Cope.

Cope, E. D. 1877 K, pp. 72, 118, pl. xxxviii, figs. 12–20.
1876 A, p. 1. (No description.)
1884 O, p. 290. (Prototomus.)
Matthew, W. D. 1899 A, p. 31. (Sinopa.)
Roger, O. 1896 A, p. 36.
Scott, W. B. 1892 B, p. 310. (Sinopa.)
Trouessart, E. L. 1898 A, p. 228. (Sinopa.)
Eocene (Wasatch); New Mexico, Wyoming.

Stypolophus insectivorus Cope.

Cope, E. D. 1872 E, p. 469.
1873 E, p. 559.
1884 O, p, 290, pl. xxiv, figs. 10, 11.
Matthew, W. D. 1899 A, p. 40.
Roger, O. 1896 A, p. 35
Scott, W. B. 1892 B, p. 310 (Sinopa.)
Trouessart, E. L 1898 A, p. 227. (Sinopa.)
Eocene (Bridger), Wyoming.

Stypolophus multicuspis Cope.

Cope, E. D. 1875 C, p. 10. (Prototomus.)
1877 K, pp. 112, 116, pl. xxxix, figs. 12–14.
1884 O, p. 290.
Matthew, W. D. 1899 A, p. 31. (Sinopa.)
Roger, O. 1896 A, p. 36.
Scott, W. B. 1892 B, p. 310. (Sinopa.)
Trouessart, E. L. 1898 A, p, 227. (Sinopa.)
Eocene (Wasatch); New Mexico.

Stypolophus pungens Cope.

Cope. E. D. 1872 N, p. 466.
1873 E, p. 559.
1884 O, pp. 290, 291, pl. xxiv, fig. 8.
Matthew, W. D. 1899 A, p. 40. (Sinopa.)
Roger, O. 1896 A, p. 35.
Scott, W. B. 1892 B, p. 310. (Sinopa.)
Trouessart, E. L. 1898 A, p. 227. (Sinopa.)
Eocene (Bridger); Wyoming.

Stypolophus rapax (Leidy).

Leidy, J. 1872 B, p. 356. (Sinopa.)
King, C. 1878 A, p. 403. (Sinopa.)
Leidy, J. 1871 F, p. 115. (Sinopa; insufficient description.)
1873 B, pp. 116, 118, 316, pl. vi, fig. 44. (Sinopa.)
Matthew, W. D. 1899 A, p. 40. (Sinopa.)
Roger, O. 1896 A, p. 35.
Schlosser, M. 1887 B, p. 35. (Sinopa.)
Scott, W. B. 1892 B, p. 311. (Sinopa.)
Trouessart, E. L. 1898 A, p. 227. (Sinopa.)
Eocene (Bridger); Wyoming.

Stypolophus secundarius Cope.

Cope, E. D. 1875 C, p. 9. (Prototomus.)
1877 K, p. 115.
1884 O, p. 290.
Matthew, W. D. 1899 A, p. 31. (Sinopa.)
Roger, O. 1896 A, p. 35.
Scott, W. B. 1892 B, p. 310. (Sinopa.)
Trouessart, E. L. 1898 A, p. 227. (Sinopa.)
Eocene (Wasatch); New Mexico.

Stypolophus strenuus Cope.

Cope, E. D. 1875 C, p. 10. (Prototomus.)
1877 K, p. 117, pl. xxxix, fig. 11.
1880 N, p. 746.
1882 E, p. 161. (Syn. of S. whiteæ.)
1884 O, p. 290.
Matthew, W. D. 1899 A, p. 31. (Sinopa.)
Roger, O. 1896 A, p. 36.
Scott, W. B. 1892 B, p. 310. (Sinopa.)
Trouessart, E. L. 1898 A; p. 228. (Sinopa.)
Eocene (Wasatch); New Mexico, Wyoming.

Stypolophus verus (Marsh).

Marsh, O. C. 1872 G, p. 126. (Limnocyon.)
Matthew, W. D. 1899 A, p. 40. (Sinopa.)
Roger, O. 1896 A, p. 35 (S. verus); p. 41 (Miacis vetus).
Schlosser, M. 1890 B, pp. 62, 64. (Limnocyon vetus.)
Scott, W. B. 1892 B, p. 310. (Sinopa.)
Trouessart, E. L. 1898 A, p. 227 (Sinopa); p. 236 (Miacis? vetus).
Eocene (Bridger); Wyoming.

typolophus viverrinus Cope.

ope, E. D. 1874 O, p. 13. (Prototomus.)
1875 C, p. 9. (Prototomus.)
1877 K, p. 112, pl. xxxviii, figs. 1-11.
1884 O, p. 290. (Prototomus.)
[atthew, W. D. 1899 A, pp. 31, 35. (Sinopa.)
oger, O. 1896 A, p. 35.
cott, W. B. 1892 B, p. 310. (Sinopa.)
rouessart, E. L. 1897 A, p. 227. (Sinopa.)
Eocene (Wasatch, Wind River); New Mexico, Wyoming.

Stypolophus whiteæ Cope.

Cope, E. D. 1882 E, p. 161.
Cope, E. D. 1881 D, p. 192. (S. strenuus, not of Cope, 1875.)
1884 O, pp. 290, 292, pl. xxv*b*, figs. 8-14; pl. xxv*d*, figs. 1, 2.
1884 S, p. 347, fig. 13.
1889 C, p. 232, fig. 58.
Lydekker, R. 1887 A, p. 308, fig. 46. (Proviverra.)
Matthew, W. D. 1899 A, pp. 31, 35. (Sinopa.)
Roger, O. 1896 A, p. 36.
Scott, W. B. 1892 B, p. 310. (Sinopa.)
Trouessart, E. L. 1897 A, p. 228. (Sinopa.)
Woodward, A. S. 1898 B, p. 383, fig. 214.
Wortman, J. L. 1886 A, p. 422, fig. 204.
Eocene (Wasatch and Wind River); Wyoming.

TRIACODON Marsh. Type *T. fallax* Marsh.

Marsh, O. C. 1871 E, p. 123. (Not *Triacodon* of Cope.)
Schlosser, M. 1887 B, p. 144.
Zittel, K. A. 1893 B, p. 603.
The systematic position of this genus is uncertain.

Triacodon fallax Marsh.

Marsh, O. C. 1871 E, p. 123.
Cope, E. D. 1873 E, p. 612.
Leidy, J. 1872 B, p. 357.
1873 B, p. 123.
Matthew, W. D. 1899 A, p. 41.
Schlosser, M. 1887 B, p. 144.
Eocene (Bridger); Wyoming.

Triacodon grandis Marsh.

Marsh, O. C. 1872 I, p. 222.
Cope, E. D. 1873 U, p. 3.
Matthew, W. D. 1899 A, p. 41.
Schlosser, M. 1887 B, p. 144.
Eocene (Bridger); Wyoming.

Triacodon nanus Marsh.

Marsh, O. C. 1872 I, p. 223.
Matthew, W. D. 1899 A, p. 41.
Schlosser, M. 1887 B, p. 144.
Eocene (Bridger); Wyoming.

PROVIVERRA Rütimeyer. Type *P. typica* Rütimeyer.

Rütimeyer, L., 1862, Schweiz. Gesell. Naturwiss., p. 80.
Cope, E. D. 1880 C, p. 79.
1882 E, p. 158.
1884 O, p. 260.
Flower and Lydekker 1891 A, p. 608.
Gaudry, A, 1878 B, p. 20.
Lydekker, R. 1887 A, p. 308.
Nicholson and Lydekker 1889 A, p. 1452.
Schlosser, M. 1887 B, p. 213.
Scott, W. B. 1892 A, p. 419.
1892 B, p. 311.
Winge, H. 1895 B, p. 91.
Zittel, K. A. 1893 B, p. 593.

Proviverra americana Scott.

Scott, W. B. 1892 B, p. 311.
Matthew, W. D. 1899 A, p. 40.
Osborn, Scott, and Speir 1878 A, p. 18. (Sinopa rapax, not of Leidy.)
Roger, O. 1896 A, p. 36.
Trouessart, E. L. 1897 A, p. 228.
Eocene (Bridger); Wyoming.

DIDELPHODUS Cope. Type *Deltatherium absarokæ* Cope.

Cope, E. D. 1882 X, p. 522.
1884 O, pp. 260, 283.
1884 S, p. 351.
1888 D, p. 255.
Nicholson and Lydekker 1889 A, p. 1453.
Schlosser, M. 1887 B, p. 214.
1888 B, pp. 16, 23.
1890 C, p. 244.
Scott, W. B. 1892 B, p. 311.
1892 D, p. 79.
Winge, H. 1895 B, pp. 46, 49, 91, 101.
Zittel, K. A. 1893 B, p. 595.

Didelphodus absarokæ Cope.

Cope, E. D. 1881 S, p. 669. (Deltatherium.)
1882 E, p. 161. (Deltatherium.)
1882 X, p. 522.
1884 O, p. 284, pl. xxiv*e*, fig. 13.
1884 S, p. 351, fig. 19.
Matthew, W. D. 1899 A, p. 31.
Roger, O. 1896 A, p. 36.
Scott, W. B. 1892 B, p. 311.
Trouessart, E. L. 1897 A, p. 229.
Eocene (Wasatch); Wyoming.

PALÆOSINOPA Matth. Type *P. veterrima* Matth.

Matthew, W. D. 1899 A, p. 31. (Palæosinopa "Wortman"; no description.)
For description of this genus and its type species see Bull. Amer. Mus. Nat. Hist., xiv, 1901, p. 22.

Palæosinopa veterrima Matth.

Matthew, W. D. 1899 A, p. 31. (P. veterrima "Wortman"; no description.)
Eocene (Wasatch); Wyoming.

VIVERRAVIDÆ.

Wortman and Matthew 1899 A, p. 136.

VIVERRAVUS Marsh. Type *V. gracilis* Marsh.

Marsh, O. C. 1872 G, p. 127.
Cope, E. D. 1873 E, p. 560.
1875 C, pp. 5, 11. (Didymictis, type *D. protenus.*)
1876 A. (Didymictis.)
1877 K, pp. 87, 123. (Didymictis.)
1880 C, p. 79. (Didymictis.)
1882 C, p. 470. (Didymictis.)
1882 E, pp. 157, 158. (Didymictis.)
1884 O, pp. 260, 304. (Didymictis.)
1884 S, p. 484. (Didymictis.)
1887 M, p. 927. (Didymictis.)
1888 K, p. 162. (Didymictis.)
Matthew, W. D. 1897 C, p. 286.
1899 A, pp. 30, 35.
Nicholson and Lydekker 1889 A, p. 1437. (Didymictis, Viverravus.)
Osborn, H. F. 1888 F, p. 1076. (Didymictis.)
Osborn and Wortman 1892 A, p. 111. (Didymictis.)
Schlosser, M. 1890 B, pp. 1, 61. (Didymictis.)
1899 A, p. 86. (Didymictis.)
Scott, W. B. 1890 A, p. 473. (Didymictis.)
1890 C, p. 265. (Didymictis.)
1892 A, p. 419. (Didymictis.)
1892 B, p. 318 (Didymictis); p. 321 (Viverravus).
1892 D, p. 80. (Didymictis.)
Steinmann and Döderlein 1890 A, p. 716. (Didymictis.)
Trouessart, E. L. 1897 A, p. 235.
Winge, H. 1895 B, pp. 46, 52, 53, 91.
Wortman, J. L. 1886 A, p. 430.
Zittel, K. A. 1893 B, p. 602 (Didymictis); p. 603 (Viverravus).

Viverravus altidens (Cope).

Cope, E. D. 1880 N, p. 746. (Didymictis.)
1881 D, p. 190. (Didymictis.)
1882 E, p. 159. (Didymictis.)
1884 O, pp. 305, 307, pl. xxv*a*, figs. 13, 14. (Didymictis.)
Earle C. 1898 A, p. 261. (Didymictis.)
Matthew, W. D. 1897 C, p. 287. (Didymictis.)
1899 A, p. 35. (Viverravus.)
Osborn, H. F. 1897 G, p. 255. (Didymictis.)
Roger, O. 1896 A, p. 40 (Didymictis.)
Scott, W. B. 1888 B, p. 169. (Didymictis.)
1892 B, p. 320. (Didymictis.)
Trouessart, E. L. 1897 A, p. 235. (Didymictis.)
Eocene (Wasatch, Wind River, Bridger); Wyoming.

Viverravus curtidens (Cope).

Cope, E. D. 1882 E, p. 160. (Didymictis.)
1884 O, pp. 306, 313, pl. xxiv*d*, fig. 10. (Didymictis.)
1884 S, p. 484. (Didymictis curtus, error? for D. curtidens.)
Matthew, W. D. 1897 C, p. 287. (Didymictis.)
1899 A, p. 30. (Viverravus.)
Osborn and Wortman 1892 A, pp. 83, 111. (Didymictis.)
Roger, O. 1896 A, p. 40. (Didymictis.)
Scott, W. B. 1892 B, p. 320. (Didymictis.)
Trouessart, E. L. 1897 A, p. 235. (Didymictis.)
Eocene (Wasatch); Wyoming.

Viverravus gracilis Marsh.

Marsh, O. C. 1872 G, p. 127.
Cope, E. D. 1881 D, p. 191. (Didymictis dawkinsianus.)
1882 E, pp. 158, 159. (Didymictis dawkinsianus.)
1884 O, pp. 306, 310, pl. xxv*a*, fig 11. (Didymictis dawkinsianus.)
1884 S, p. 485, fig. 30. (Didymictis dawkinsianus.)
Matthew, W. D. 1897 C, pp. 264, 286. (Didymictis dawkinsianus.)
1899 A, pp. 35, 40.
Osborn, H. F. 1897 G, p. 255. (Didymictis dawkinsianus.)
Osborn and Wortman 1892 A, pp. 83, 111. (Didymictis dawkinsianus.)
Roger, O. 1896 A, p. 40 (Didymictis dawkinsianus); p. 41 (V. gracilis).
Schlosser, M. 1890 B, p. 63.
Scott, W. B. 1892 B, p. 320 (Didymictis dawkinsianus); p. 321 (V. gracilis).
Trouessart, E. L. 1897 A, p. 235 (Didymictis dawkinsianus); p. 236 (V. gracilis).
Wortman and Matthew 1899 A, p. 136.
Zittel, K. A. 1893 B, p. 603, fig. 506 B. (Didymictis dawkinsianus.)
Eocene (Wasatch, Wind River, Bridger), Wyoming, Colorado.

Viverravus haydenianus (Cope).

Cope, E. D. 1882 C, p. 464. (Didymictis.)
1884 K, 309. (Didymictis primus.)
1884 O, pp. 305, 306, pl. xxiii*c*, figs. 12, 13. (Didymictis.)
1884 S, p. 484. (Didymictus.)

Cope, E. D. 1888 CC, p. 304. (D. haydenianus, D. primus.)
Matthew, W. D. 1897 C, pp. 286, 287. (Didymictis.)
1899 A, p. 29. (Viverravus.)
Roger, O. 1896 A, p. 40. (Didymictus haydenianus, D. primus.)
Scott, W. B. 1892 B, p. 320. (Didymictus.)
Trouessart, E. L. 1897 A, p. 234 (D. haydenianus); p. 235 (D. primus).
Zittel, K. A. 1893 B, p. 603, fig. 506 A. (Didymictis.)
Eocene (Torrejon); New Mexico.

Viverravus leptomylus (Cope).

Cope, E. D. 1880 O, p. 908. (Didymictis.)
1881 D, p. 191. (Didymictis.)
1882 E, p. 159. (Didymictus.)
1884 O, pp. 305, 309, pl. xxv*a*, fig. 12. (Didymictis.)
Matthew, W. D. 1897 C, p. 287. (Didymictis.)
1899 A, p. 30, footnote; p. 35. (Viverravus.)
Osborn and Wortman 1892 A, pp. 83, 111. (Didymictis.)
Roger, O. 1896 A, p. 40. (Didymictis.)
Scott, W. B. 1892 B, 320. (Didymictis.)
Trouessart, E. L. 1897 A, p. 235. (Didymictis.)
Eocene (Wind River); Wyoming.

Viverravus massetericus (Cope).

Cope, E. D. 1882 E, p. 159. (Didymictis.)
1884 O, pp. 306, 312, pl. xxiv*e*, fig. 11. (Didymictis.)
1884 S, p. 484, fig. 29. (Didymictis.)
Matthew, W. D. 1897 C, p. 287. (Didymictis.)
Matthew, W. D. 1899 A, p. 30. (Viverravus.)
Roger, O. 1896 A, p. 40.
Scott, W. B. 1892 B, p. 320. (Didymictis.)
Trouessart, E. L. 1897 A, p. 235. (Didymictis.)
Eocene (Wasatch); Wyoming.

Viverravus nitidus Marsh.

Marsh, O. C. 1872 I, p. 205.
Matthew, W. D. 1899 A, p. 40.
Roger, O. 1896 A, p. 41.
Schlosser, M. 1887 B, p. 143. (Entomodon?.)
1890 B, p. 63.
Scott, W. B. 1892 B, p. 321.
Trouessart, E. L. 1897 A, p. 236.
Eocene (Bridger); Wyoming.

Viverravus protenus (Cope).

Cope, E. D. 1874 O, p. 15. (Limnocyon.)
1875 C, p. 11. (Didymictis.)
1875 L, p. 21. (Didymictis.)
1877 K, p. 123, pl. xxxix, figs. 1–9. (Didymictis.)
1882 E, p. 159. (Didymictis.)
1884 O, pp. 305, 311, pl. xxv*d*, figs. 4, 5. (Didymictis.)
1887 S, p. 245. (Didymictis.)
Matthew, W. D. 1897 C, p. 286. (Didymictis.)
1899 A, pp. 30, 35. (Viverravus.)
Osborn, H. F. 1897 G, p. 255. (Didymictis.)
Roger, O. 1896 A, p. 40. (Didymictis.)
Scott, W. B. 1892 B, p. 320. (Didymictis.)
Trouessart, E. L. 1897 A, p. 235. (Didymictis.)
Eocene (Wasatch); New Mexico, Wyoming, Colorado.

TELMATOCYON Marsh. Type *Limnocyon riparius* Marsh.

Marsh, O. C. 1899 B, p. 397.

Telmatocyon riparius Marsh.

Marsh, O. C. 1872 I, p. 203. (Limnocyon.)
1899 B, p. 397.
King, C. 1878 A, p. 403. (Limnocyon.)
Matthew, W. D. 1899 A, pp. 35, 40. (Viverravus.)
Roger, O. 1896 A, p. 41. (Viverravus.)
Schlosser, M. 1890 B, pp. 63, 64. (Limnocyon.)
Scott, W. B. 1891 B, pp. 310, 321. (Viverravus.)
Trouessart, E. L. 1897 A, p. 236. (Viverravus.)
Eocene (Wind River, Bridger); Wyoming.

AMBLOCTONIDÆ.

Cope, E. D. 1877 K, p. 89.
1880 C, pp. 78, 79. (Amblyctonidæ.)
1882 E, pp. 157, 158. (Amblyctonidæ.)
1884 O, pp. 259, 260, 739. (Amblyctonidæ.)
Haeckel, E. 1895 A, pp. 578, 583. (Palæonictida.)
Osborn, H. F. 1893 D, p. 83. (Palæonictidæ.)
Osborn and Wortman 1892 A, p. 103. (Palæonictidæ.)
Roger, O. 1896 A, p. 37. (Palæonictidæ.)
Schlosser, M. 1886 C.
Scott, W. B. 1892 B, pp. 294, 311. (Palæonictidæ.)
1892 D, pp. 77, 79. (Palæonictidæ.)
Trouessart, E. L. 1897 A, p. 229. (Palæonictidæ.)
Winge, H. 1895 B, pp. 47, 52, 91. (Palæonictidæ.)
Wortman, J. L. 1899 A, p. 140. (Palæonictidæ.)
Zittel, K. A. 1893 B, p. 595. (Palæonictidæ.)

PALÆONICTIS Blainv. Type *P. gigantea* Blainv.

Blainville, H. M. D. 1864 A (1841), ii, N, p. 79.
Cope, E. D. 1876 A, p. 3.
1877 K, p. 88. (Palæonyctis.)
1884 O, p. 260. (Palæonyctis.)
Gervais, P. 1859 A, p. 225.
Gaudry, A. 1878 B, p. 18.
Osborn, H. F. 1892 A.
1893 E.
Osborn, H. F. 1893 H.
1893 I, p. 321.
Osborn and Wortman 1892 A, pp. 81, 96, 100, 104.
Pictet, F. J. 1853 A, p. 212.
Schlosser, M. 1887 B, p. 211.
Scott, W. B. 1892 A, p. 418.
1892 B, p. 311.
1892 D, p. 79.

Winge, H. 1895 B, pp. 47, 52, 91, 93, 100, 101.
Wortman, J. L. 1894 A, p. 156.
Zittel, K. A. 1893 B, p. 595.

Palæonictis occidentalis Osb. and Wort.

Osborn and Wortman 1892 A, p. 104, pl. iv.
Matthew, W. D. 1899 A, p. 31.
Osborn, H. F. 1893 H, p. 435, fig. 1.
Roger, O. 1896 A, p. 37.
Trouessart, E. L. 1897 A, p. 230.
Zittel, K. A. 1893 B, p. 595, fig. 499.
Eocene (Wasatch); Wyoming.

AMBLOCTONUS Cope. Type *A. sinosus* Cope.

Cope, E. D. 1875 C, pp. 5, 7.
1876 A.
1877 K, pp. 87, 90.
1880 C, p. 79. (Amblyctonus.)
1882 E, p. 158. (Amblyctonus.)
1884 O, p. 260. (Amblyctonus.)
1887 S, p. 251. (Amblyctonus.)
1889 C, p. 190. (Amblyctonus.)
Flower and Lydekker 1891 A, p. 609. (Amblyctonus.)
Nicholson and Lydekker 1889 A, p. 1453. (Amblyctonus.)
Osborn, H. F. 1893 H, p. 436.
Osborn and Wortman 1892 A, pp. 81, 99, 104.
Schlosser, M. 1887 B, p. 206.
Scott, W. B. 1892 B, p. 312.
1892 D, p. 80.
Zittel, K. A. 1893 B, p. 596. (Amblyctonus.)

Ambloctonus sinosus Cope.

Cope, E. D. 1875 C, p. 8.
1877 K, p. 91, pl. xxxiii.
1881 J, p. 546, fig. 5. (Amblyctonus.)
1884 O, p. 361. (Amblyctonus.)
1884 S, p. 265, fig. 4. (Amblyctonus.)
Matthew, W. D. 1899 A, p. 31. (Amblyctonus.)
Osborn and Wortman 1892 A, p. 106, fig. 8.
Roger, O. 1896 A, p. 37.
Trouessart, E. L. 1897 A, p. 230.
Eocene (Wasatch); New Mexico.

HYÆNODONTIDÆ.

Cope, E. D. 1875 L, p. 22.
1877 K, p. 89. (Oxyænidæ.)
1880 C, pp. 78, 79. (Oxyænidæ.)
1882 E, pp. 156, 158. (Oxyænidæ.)
1884 O, pp. 259, 260. (Oxyænidæ.)
1884 S, pp. 261, 480. (Oxyænidæ.)
1886 L, p. 965.
Flower and Lydekker 1891 A, p. 608.
Gill, T. 1872 B, pp. 59, 68.
Haeckel, E. 1895 A, pp. 578, 583. (Hyænodontida.)
Leidy, J. 1871 C, p. 342.
Lydekker, R. 1884 A, p. 348.
1885 B, p. 20.
1885 E.
Nicholson and Lydekker 1889 A, p. 1450.
Osborn, H. F. 1893 D.
1900 I, p. 276. (Oxyænidæ.)
Osborn and Wortman 1892 A, p. 104.
Roger, O. 1896 A, p. 37.
Schlosser, M. 1886 C. (Oxyænidæ, Hyænodontidæ.)
Scott, W. B. 1888 B, p. 184.
1892 A, p. 419.
1892 B, pp. 294, 318.
1892 D, pp. 77, 79.
1894 F.
1895 F, p. 720.
Steinmann and Döderlein 1890 A, p. 714.
Trouessart, E. L. 1897 A, p. 230.
Winge, H. 1895 B, pp. 46, 48, 50, 91. (Hyænodontidæ.)
Wortman, J. L. 1899 A, p. 139. (Oxyænidæ, Hyænodontidæ.)
Zittel, K. A. 1893 B, p. 596.

OXYÆNINÆ.

Osborn, H. F. 1900 I, p. 276. (Oxyænidæ.)
Schlosser, M. 1886 C. (Oxyænidæ.)
Wortman, J. L. 1899 A, p. 139. (Oxyænidæ.)

OXYÆNA Cope. Type *O. lupina* Cope.

Cope, E. D. 1874 O, p. 11.
1875 C, p. 9,
1875 L.
1876 A.
1877 K, pp. 87, 95.
1880 C, p, 79.
1882 E, p. 158.
1882 S, p. 480.
1884 E.
1884 O, pp. 260, 313.
1887 S, p, 251.
Flower and Lydekker 1891 A, p. 608.
Lydekker, R. 1885 B, p. 35.
Matthew, W. D. 1898 A, p. 380.
Nicholson and Lydekker 1889 A, p. 1451. (Oxhyæna.)
Osborn, H. F. 1900 I, p. 269.
Osborn and Wortman 1892 A, p. 108.
Schlosser, M. 1887 B, p. 204.
1890 B, pp. 36, 71.
Scott, W. B. 1888 B, p. 184.
1892 A, p. 418.
1892 B, p. 314.
1892 D, p. 79.
Winge, H. 1895 B, pp. 47, 53, 91, 93, 101.
Wortman, J. L. 1894 A, p. 152.
Zittel, K. A. 1893 B, p. 597.

Oxyæna forcipata Cope.

Cope, E. D. 1874 O, p. 12.
1875 C, p. 9.
1876 A.
1877 K, pp. 72, 105, pls. xxxv, figs. 7-12; pl. xxxvi; pl. xxxvii, figs. 1-5.
1882 E, p. 164.
1884 O, p. 318, pl. xxiv*b*, figs. 11-15; pl. xxiv*c*, figs. 1-18.
1884 S, pp. 260, 482, figs. 3, 25.
King, C. 1878 A, p. 376.
Matthew, W. D. 1899 A, p. 31.
Osborn, H. F. 1897 G, p. 255.
Osborn and Wortman 1892 A, p. 109.
Roger, O. 1896 A, p. 37.
Trouessart, E. L. 1897 A, p. 230.
Eocene (Wasatch); New Mexico, Wyoming.

From a remark by Dr. Wortman (1899 A, p. 140) we may infer that a part, or most probably all, of the remains described by Cope in 1884 O, p. 318, as *O. forcipata* belong to *O. lupina*.

Oxyæna huerfanensis Osb.

Osborn, H. F. 1897 G, p. 255.
Matthew, W. D. 1899 A, p. 35.
Trouessart, E. L. 1899 A, p. 1290.
Eocene (Wind River); Colorado.

Oxyæna lupina Cope.

Cope, E. D. 1874 O, p. 11.
1875 C.
1877 K, p. 101, pl. xxxiv, figs. 14-17; pl. xxxv, figs. 1-4.
King, C. 1878 A, p. 376.
Matthew, W. D. 1899 A, p. 31.
Osborn, H. F. 1900 I, p, 276.
Osborn and Wortman 1892 A, p. 108, fig. 9.
Roger, O. 1896 A, p. 37.
Trouessart, E. L. 1897 A, p. 597, fig. 501.
Wortman, J. L. 1899 A, p. 140, pl. vii; text figs. 1, 2.
Eocene (Wasatch); New Mexico, Wyoming.

Oxyæna morsitans Cope.

Cope, E. D. 1874 O, p. 12.
1875 C, p. 9.
1877 K, p. 98, pl. xxxiv, figs. 1-13.
1881 J, p. 546, fig. 6.
1884 S, p. 263, fig. 5.
1889 C, p. 190.
Matthew, W. D. 1899 A, p. 31.
Roger, O. 1896 A, p. 37.
Trouessart, E. L. 1897 A, p. 230.
Eocene (Wasatch); New Mexico.

PATRIOFELIS Leidy. Type *P. ulta* Leidy.

Leidy, J. 1870 G, p. 11,
Cope, E. D. 1880 C, p. 79.
1880 N, p. 745. (Protopsalis, type *P. tigrinus* Cope.)
1881 D, p. 193. (Protopsalis.)
1882 E, p. 158. (Patriofelis, Protopsalis.)
1884 O, p. 260 (Patriofelis); pp. 260, 321 (Protopsalis).
1884 S, p. 480 (Protopsalis); p. 483 (Patriofelis).
Leidy, J. 1871 C, p. 344.
1873 B, p. 114.
Marsh, O. C. 1872 I, p. 202. (Limnofelis, type *L. ferox.*)
1872 O, p. 406. (Oreocyon, type *O. latidens.*)
1877 E. (Orocyon, Limnofelis.)
Nicholson and Lydekker 1889 A, p. 1452. (Protopsalis.)
Osborn, H. F. 1893 H, p. 436.
1896 C, pp. 705, 710, illus. 1.
1898 Q, p. 15.
1900 I, p. 269.
Schlosser, M. 1887 B, p. 210. (Patriofelis, Protopsalis.)
1890 B, p. 36. (Protopsalis.)
Scott, W. B. 1892 B, p. 313 (Patriofelis); p. 316 (Protopsalis).
1892 D, p. 79 (Protopsalis); p. 80 (Patriofelis).
1894 F, p. 533.
Winge, H. 1895 B, p. 97.
Woodward, A. S. 1898 B, p. 384.
Wortman, J. L. 1894 A.
Zittel, K. A. 1893 B, p. 596 (Patriofelis); p. 597 (Protopsalis).

Patriofelis ferox (Marsh).

Marsh, O. C. 1872 I, p. 202. (Limnofelis.)
King, C. 1878 A, p. 403.
Lydekker, R. 1896 B, p. 372, fig. 77.
Matthew, W. D. 1899 A, p. 41.
Osborn, H. F. 1898 Q, p. 10.
1900 I, p. 276, figs. 2, 4-8.
Roger, O. 1896 A, p. 37.
Schlosser, M. 1890 B, p. 63. (Limnofelis.)
Scott, W. B. 1892 B, p. 316. (Syn.? of Protopsalis tigrinus.)
Trouessart, E. L. 1897 A, p. 230.
Woodward, A. S. 1898 B, p. 384, fig. 215.
Wortman, J. L. 1894 A, pl. i, text figs. 1-5.
Eocene (Bridger); Wyoming.

Patriofelis latidens (Marsh).

Marsh, O. C. 1872 I, p. 203. (Limnofelis.)
1872 O, p. 406. (Oreocyon.)
Matthew, W. D. 1899 A, p. 41.
Schlosser, M. 1890 B, p. 63. (Limnofelis.)
Scott, W. B. 1892 B, p. 313. (Syn. of P. ulta.)
Trouessart, E. L. 1897 A, p. 230. (Syn. of P. ulta.)
Wortman, J. L. 1894 A, p. 129.
Eocene (Bridger); Wyoming.
A doubtful species.

Patriofelis tigrina (Cope).

Cope, E. D. 1880 N, p. 745. (Protopsalis.)
1881 D, p. 193. (Protopsalis.)
1884 O, pp. 260, 322, pl. xxv*b*, figs. 1-7. (Protopsalis.)
1884 S, p. 483, fig. 27. (Protopsalis.)
Matthew, W. D. 1899 A, p. 35.
Osborn, H. F. 1900 I, p. 277, fig. 7 B. (Protopsalis.)
Roger, O. 1896 A, p. 38. (Protopsalis.)
Schlosser, M. 1887 B, p. 210. (Protopsalis.)
Scott, W. B. 1888 B, p. 174. (Protopsalis.)
1892 B, 316. (Protopsalis.)
Trouessart, E. L. 1897 A, p. 231. (Protopsalis.)

Wortman, J. L. 1894 A, p. 130.
Eocene (Wind River); Wyoming.

Patriofelis ulta Leidy.

Leidy, J. 1870 G, p. 11.
1871 C, p. 344.
1872 B, p. 355.
1873 B, pp. 114, 316, pl. ii, fig. 10.
Matthew, W. D. 1899 A, p. 41.
Osborn, H. F. 1897 G, p. 25.
1900 I, p. 279.
Osborn and Wortman 1892 A, p. 97.
Roger, O. 1896 A, p. 37.
Scott, W. B. 1892 B, p. 313.
Trouessart, E. L. 1897 A, p. 230.
Wortman, J. L. 1894 A, pp. 129, 130, 164.
Eocene (Bridger); Wyoming.

HYÆNODONTINÆ.

Schlosser, M. 1886 C. (Hyænodontidæ.)
Winge, H. 1895 B, p. 46. (Hyænodontini.)
Wortman, J. L. 1899 A, p. 139. (Hyænodontidæ.)

HYÆNODON Laizer and Parieu. Type *H. leptorhynchus* Laizer and Parieu.

Laizer and Parieu 1839 A.
Blainville, H. M. D. 1864 A, ii, L, p. 55, pl. xii, figs. 1-5. (Taxotherium.)
Cope, E. D. 1875 C, p. 5.
1883 I, p. 79.
1884 O, p. 739.
1884 S, p. 344.
1886 L, p. 966.
1888 D.
Farr, M. S. 1896 A, p. 163.
Filhol, H, 1876 A, p. 169.
Flower, W. H. 1876 B, xiii, p. 514.
Flower and Lydekker 1891 A, p. 608.
Gaudry, A. 1878 B, p. 13.
Gervais, P. 1859 A, p. 232.
Giebel, C. G. 1847 A, p. 43.
Leidy, J. 1869 A, p. 38.
1871 C, p. 342.
Lydekker, R. 1884 A, p. 348.
1885 B, p. 21.
1900 A, p. 927.
Marsh, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1450.
Osborn and Wortman 1894 A, p. 224.
Owen, R. 1852 B.
1868 A, p. 340.
Pictet, F. J. 1853 A, p. 196.
Pomel, A. 1853 A, p. 115.
Schlosser, M. 1887 B, p. 173.
Scott, W. B. 1888 B, pp. 164, 175.
1892 A, p. 419.
1892 B, p. 317.
1892 D, p. 79.
1894 F.
1895 B.
Trouessart, E. L. 1897 A, p. 232.
Vasseur, G. 1874 A.
Wilckens, M. 1885 D, p. 490.
Winge, H. 1895 B, pp. 46, 50, 91, 100, 101.
Woodward, A. S. 1898 B, p. 385.
Wortman, J. L. 1894 A, p. 155.
Zittel, K. A. 1893 B, p. 599.

Hyænodon crucians Leidy.

Leidy, J. 1853 D, p. 393.
Cope, E. D. 1874 B, p. 505.
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 411.
Leidy, J. 1869 A, pp. 48, 369, pl. ii.
1871 C, p. 342.
Matthew, W. D. 1899 A, p. 53.
Osborn and Wortman 1894 A, p. 224.
Roger, O. 1896 A, p. 40.
Scott, W. B. 1888 B, p. 175.
1892 B, p. 318.
1894 F.
Trouessart, E. L. 1897 A, p. 234.
Oligocene (White River); South Dakota.

Hyænodon cruentus Leidy.

Leidy, J. 1853 D, p. 393.
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 411.
Leidy, J. 1869 A, pp. 47, 369, pl. v, figs. 10, 11.
1871 C, p. 342.
Matthew, W. D. 1899 A, p. 53.
Osborn and Wortman 1894 A, p. 224.
Roger, O. 1896 A, p. 40.
Scott, W. B. 1888 B, p. 175, pl. vi, fig. 2.
1894 F, figs. 1-4, 6, 7, 10.
1895 B, pl. xii A.
Trouessart, E. L. 1897 A, p. 234.
Woodward, A. S. 1898 B, p. 387, fig. 217.
Oligocene (White River); South Dakota, Colorado.

Hyænodon horridus Leidy.

Leidy, J. 1853 D, p. 392.
Cope, E. D. 1874 B, p. 505.
1884 S, p. 346, fig. 12.
Flower, W. H. 1876 C, p. 120.
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 411.
Leidy, J. 1869 A, pp. 39, 369, pl. iii.
1871 C, p. 342.
Matthew, W. D. 1899 A, p. 53.
Osborn and Wortman 1894 A, p. 224.
Roger, O. 1896 A, p. 40.
Scott, W. B. 1888 B, p. 175, pl. vii, figs. 4-6.
1894 F, fig. 5.
1895 B, p. 442.
Scott and Osborn 1887 B, p. 151.
Trouessart, E. L. 1897 A, p. 234.
Wortman, J. L. 1886 A, p. 421, fig. 203.
Zittel, K. A. 1893 B, p. 601, fig. 505.
Oligocene (White River); South Dakota.

Hyænodon leptocephalus Scott.

Scott, W. B. in Scott and Osborn 1887 B, p. 152, text fig. 1.
Matthew, W. D. 1899 A, p. 53.
Osborn and Wortman 1894 A, p. 224.
Roger, O. 1896 A, p. 40.
Scott, W. B. 1888 B, p. 175.
1894 F.
Trouessart, E. L. 1897 A, p. 234.
Oligocene (White River); South Dakota.

Hyænodon mustelinus Scott.

Scott, W. B. 1894 F, p. 499.
Oligocene (White River); South Dakota.

Hyænodon paucidens Osb. and Wort.

Osborn and Wortman 1894 A, p. 223.
Matthew, W. D. 1899 A, p. 53.
Roger, O. 1896 A, p. 40.
Scott, W. B. 1894 F.
Trouessart, E. L. 1897 A, p. 234.
Oligocene (White River); South Dakota.

HEMIPSALODON Cope. Type *H. grandis* Cope.

Cope, E. D. 1885 H, p. 163.
1891 A, p. 6.
Nicholson and Lydekker 1889 A, p. 1452.
Scott, W. B. 1892 B, p. 316.
1892 D, p. 79.
1894 F, p. 535.
Zittel, K. A. 1893 B, p. 598.

Hemipsalodon grandis Cope.

Cope, E. D. 1885 H, p. 163.
Ami, H. M. 1891 A.
Cope, E. D. 1886 U, p. 80.
1889 I, p. 151.
1891 A, p. 6, pls. ii, iii.
Matthew, W. D. 1899 A, p. 53.
Roger, O. 1896 A, p. 38.
Scott, W. B. 1892 B, p. 317.
Trouessart, E. L. 1897 A, p. 231.
Oligocene (White River); Northwest Territory, Canada.

OXYÆNODON Matth. Type *O. dysodus* Matth.

Matthew, W. D. 1899 A, p. 49. (Reference to figured specimen.)
Osborn, H. F. 1900 I, p. 278.
Wortman, J. L. 1899 A, p. 145.

Oxyænodon dysodus Matth.

Matthew, W. D. 1899 A, p. 49. (Reference to figured specimen.)
Osborn, H. F. 1895 A, p. 78, fig. 3. ("? Hyænodon.")
Eocene (Uinta); Utah.

Oxyænodon dysclerus nom. nov.

Wortman, J. L. 1899 A, p. 145, fig. 3. (O. dysodus, not of Matthew.)
Eocene (Uinta); Utah.

It is by no means certain that this species belongs to the genus *Oxyænodon*, as represented by the type jaw.

UINTACYONIDÆ.

The following authors call this family *Miacidæ*.

Cope, E. D. 1880 C, pp. 78, 79.
1882 E, pp. 156, 157.
1884 O, pp. 259, 260.
1884 S, p. 483.
1886 L, p. 966.
1888 K, p. 163.
1888 EE, p. 163.
Matthew, W. D. 1897 C, p. 286.
1899 A, p. 49. (Canidæ, in part.)
Nicholson and Lydekker 1889 A, p. 1437.
Roger, O. 1896 A, p. 40.
Schlosser, M. 1886 C.
Scott, W. B. 1888 A.
1888 B, p. 173.
1892 A, p. 419.
1892 B, pp. 294, 318.
1892 D, pp. 77, 80.
1895 F, p. 720.
Steinmann and Döderlein 1890 A, p. 716.
Trouessart, E. L. 1897 A, p. 234.
Zittel, K. A. 1893 B, p. 602.

UINTACYON Leidy. Type *U. edax* Leidy.

Leidy, J. 1872 J, p. 277.
Ameghino, F. 1896 A, p. 454. (Miacis, in part.)
Cope, E. D. 1880 C, p. 79.
1882 E, p. 157.
1884 O, pp. 260, 301. (Miacis, in part.)
1884 S, p. 483. (Miacis, in part.)
Leidy, J. 1873 B, p. 118. (Uintacyon.)
Matthew, W. D. 1897 C, p. 286. (Miacis, in part.)
Nicholson and Lydekker 1889 A, p. 1437. (Miacis, in part.)
Osborn, H. F. 1892 I. (Miacis in part.)
Osborn and Wortman 1892 A, pp. 95, 110. (Miacis, in part.)
Schlosser, M. 1888 B, p. 58 (Miacis); p. 61 (Uintacyon).
1890 B, p. 60. (Miacis, in part.)
1899 B, p. 146.
Scott, W. B. 1888 B, p. 173. (Miacis, in part.)
1890 A, p. 473. (Miacis, in part.)
1892 B, p. 320. (Miacis, in part.)

Scott, W. B. 1892 D, p. 80. (Miacis, in part.)
1898 B, p. 363. (Miacis, in part.)
Trouessart, E. L. 1897 A, p. 235. (Miacis, in part.)
Winge, H. 1895 B, pp. 46, 52, 91, 92. (Miacis, in part.)
Wortman and Matthew 1899 A, p. 110.
Zittel, K. A. 1893 B, p. 602. (Miacis, in part.)

Uintacyon bathygnathus (Scott).

Scott, W. B. 1888 B, p. 172. (Miacis.)
Matthew, W. D. 1899 A, p. 40.
Roger, O. 1896 A, p. 41. (Miacis.)
Schlosser, M. 1887 B, p. 59. (Miacis.)
Scott, W. B. 1889 B, p. 220. (Miacis.)
1892 B, p. 320. (Miacis.)
Trouessart, E. L. 1897 A, p. 235. (Miacis.)
Eocene (Bridger); Wyoming.

Uintacyon brevirostris (Cope.)

Cope, E. D. 1881 D, p. 190. (Miacis.)
1882 E, p. 158. (Miacis.)
1884 O, pp. 302, 303. (Miacis.)
1884 S, p. 484, fig. 28. (Miacis.)
Matthew, W. D. 1899 A, pp. 30, 35.
Osborn and Wortman 1892 A, pp. 83, 111. (Miacis.)
Roger, O. 1896 A, p. 41. (Miacis.)
Scott, W. B. 1892 B, p. 320. (Miacis.)
Trouessart, E. L. 1897 A, p. 236. (Miacis.)
Wortman and Matthew 1899 A, p. 112.
Eocene (Wind River, Wasatch); Wyoming.

Uintacyon canavus (Cope).

Cope, E. D. 1881 D, p. 189. (Miacis.)
1882 E, p. 158. (Miacis.)
1884 O, p. 302. (Miacis.)
Matthew, W. D. 1899 A, pp. 30, 35. (Uintacyon.)
Osborn and Wortman 1892 A, p. 110. (Miacis.)
Roger, O. 1896 A, p. 41. (Miacis.)
Scott, W. B. 1892 B, p. 320. (Miacis.)
Trouessart, E. L. 1897 A, p. 236. (Miacis.)
Wortman and Matthew 1899 A, p. 112.
Eocene (Wasatch and Wind River); Wyoming.

Uintacyon edax Leidy.

Leidy, J. 1872 J, p. 277.
Cope, E. D. 1884 O, p. 303. (Miacis.)
1887 Q. (Miacis.)
King, C. 1878 A, p. 403. (Uintacyon.)
Leidy, J. 1873 B, pp. 118, 316, pl. xxvii, figs. 6–10. (Uintacyon.)
Matthew, W. D. 1899 A, p. 40. (Uintacyon.)
Osborn and Wortman 1892 A, pp. 83, 110. (Miacis.)
Roger, O. 1896 A, p. 40. (Miacis.)
Schlosser, M. 1888 B, p. 61.
Scott, W. B. 1892 B, p. 320. (Miacis.)
Trouessart, E. L. 1897 A. p. 235. (Miacis.)
Wortman and Matthew 1899 A, p. 114.
Eocene (Bridger); Wyoming.

Uintacyon promicrodon Wort. and Matth.

Wortman and Matthew 1899 A, p. 111.
Eocene (Wasatch); Wyoming.

Uintacyon pugnax Wort. and Matth.

Wortman and Matthew 1899 A, p. 114.
Eocene; Wyoming.

Uintacyon vorax Leidy.

Leidy, J. 1872 J, p. 277.
Cope, E. D. 1884 O, p. 302. (Miacis.)
Leidy, J. 1873 B, pp. 120, 316, pl. xxvii, figs. 11–13. (Uintacyon.)
Matthew, W. D. 1899 A, pp. 35, 40. (Uintacyon.)
Roger, O. 1896 A, p. 40. (Miacis.)
Schlosser, M. 1888 B, p. 61.
Trouessart, E. L. 1897 A, p. 235. (Miacis.)
Wortman and Matthew 1899 A, p. 113.
Eocene (Wind River, Bridger); Wyoming.

Uintacyon vulpinus Scott and Osb.

Scott and Osborn 1887 A, p. 255. (Amphicyon.)
Matthew, W. D. 1899 A, p. 49. (Miacis.)
Roger, O. 1896 A, p. 41. (Miacis.)
Scott, W. B. 1890 A, p. 474. (Miacis.)
1892 B, p. 321. (Miacis.)
Trouessart, E. L. 1897 A, p. 236. (Miacis.)
Eocene (Uinta); Utah.

PRODAPHÆNUS Matth. Type *P. uintensis* (Osb.).

Matthew, W. D. 1899 A, p. 49. (April 8.)
Wortman and Matthew 1899 A, p. 114. (June 21.)

Prodaphænus scotti Wort. and Matth.

Wortman and Matthew 1899 A, p. 115.
Matthew, W. D. 1899 A, p. 49. (Name only.)
Eocene (Uinta); Wyoming.

Prodaphænus uintensis (Osb.).

Osborn, H. F. 1895 A, p. 77, fig. 2. (Miacis.)
Matthew, W. D. 1899 A, p. 49.
Roger, O. 1896 A, p. 41. (Miacis.)
Scott, W. B. 1898 B, p. 363, fig. 1?. (Miacis.)
Trouessart, E. L. 1897 A, p. 236. (Miacis.)
Eocene (Uinta); Utah.

PROCYNODICTIS Wort. and Matth. Type *P. vulpiceps* Wort. and Matth.

Wortman and Matthew 1899 A, p. 121.
Put in this family provisionally.

Procynodictis vulpiceps Wort. and Matth.

Wortman and Matthew 1899 A, p. 121, figs. 7, 8.
Matthew, W. D. 1899 A, p. 49. (No description.)
Eocene (Uinta); Utah.

THINOCYON Marsh. Type *T. velox* Marsh.

Marsh, O. C. 1872 I, p. 204.
Schlosser, M. 1890 B, p. 64.
Scott, W. B. 1892 B, p. 321.
Zittel, K. A. 1893 B, p. 602. (Syn.? of Miacis.)

Thinocyon velox Marsh.

Marsh, O. C. 1872 I, p. 204.
Matthew, W. D. 1899 A, p. 40.
Roger, O. 1896 A, p. 41.
Schlosser, M. 1890 B, p. 63.
Scott, W. B. 1892 B, p. 321.
Trouessart, E. L. 1897 A, p. 237.
Eocene (Bridger); Wyoming.

VULPAVUS Marsh. Type *V. palustris* Marsh.

Marsh, O. C. 1871 E, p. 124.
Cope, E. D. 1872 E, p. 470. (Miacis, type *M. parvivorus.*)
1873 E, p. 561. (Miacis, Viverravus.)
1880 C, p. 79. (Miacis.)
1882 E, p. 157. (Miacis.)
1884 O, pp. 260, 301. (Miacis, in part.)
Matthew, W. D. 1899 A, p. 39.
Nicholson and Lydekker 1889 A, p. 1437. (Miacis, in part.)
Osborn and Wortman 1892 A, pp. 95, 110. (Miacis, in part.)
Schlosser, M. 1899 B, p. 60 (Miacis); p. 64. (Vulpavus.)
Scott, W. B. 1888 B, p. 173. (Miacis, in part.)
1890 A, p. 473. (Miacis, in part.)
1892 B, p. 320. (Miacis, in part.)
1892 D, p. 80. (Miacis in part.)
1898 B, p. 363. (Miacis, in part.)
Trouessart, E. L. 1897 A, p. 236. (Syn.? of Miacis.)
Winge, H. 1895 B, pp. 46, 52, 91, 92. (Miacis, in part.)
Wortman and Matthew 1899 A, p. 110.
Zittel, K. A. 1893 B, p. 602. (=? Miacis.)

Vulpavus palustris Marsh.

Marsh, O. C. 1871 E, p. 124.
King, C. 1878 A, p. 403.
Leidy, J. 1872 B, p. 356.
1873 B, p. 118.
Matthew, W. D. 1899 A, p, 39.
Roger, O. 1896 A, p. 41. (Miacis?.)
Schlosser, M. 1890 B, p. 62.
Trouessart, E. L. 1897 A, p. 236. (Miacis?.)
Wortman and Matthew 1899 A, p. 118, figs. 4-6.
Eocene (Bridger); Wyoming.

Vulpavus parvivorus (Cope).

Cope, E. D. 1872 E, p. 470. (Miacis.)
1873 E, p. 560. (Viverravus.)
1873 U, p. 3. (Viverravus.)
1884 O, pp. 302, 304, pl. xxiv, fig. 12. (Miacis.)
Matthew, W. D. 1899 A, p. 39. (Syn. of Vulpavus palustris.)
Roger, O. 1896 A, p. 40. (Miacis.)
Scott, W. D. 1892 B, p. 320. (Miacis.)
Trouessart, E. L. 1897 A, p. 235. (Miacis.)
Wortman and Matthew 1899 A, pp. 119, 120.
Eocene (Bridger); Wyoming.

ZIPHACODON Marsh. Type *Z. rugatus* Marsh.

Marsh, O. C. 1872 I, p. 216.
1877 E. (Name only.)
Matthew, W. D. 1899 A, p. 40.
Schlosser, M. 1890 B, p. 64.
Zittel, K. A. 1893 B, p. 603.

Ziphacodon rugatus Marsh.

Marsh, O. C. 1872 I, p. 216.
Roger, O. 1896 A, p. 42.
Schlosser, M. 1890 B, p. 64.
Trouessart, E. L. 1897 A, p. 237.
Eocene (Bridger); Wyoming.

HARPALODON Marsh. Type *H. sylvestris* Marsh.

Marsh, O. C. 1872 I, p. 216.
Schlosser, M. 1890 B, p. 64.
Zittel, K. A. 1898 A, p. 603.

Harpalodon sylvestris Marsh.

Marsh, O. C. 1872 I, p. 216,
Matthew, W. D. 1899 A, p. 40.
Roger, O. 1896 A, p. 42.
Schlosser, M. 1890 B, p. 64.
Trouessart, E. L. 1897 A, p. 231.
Eocene (Bridger); Wyoming.

Harpalodon vulpinus Marsh.

Marsh, O. C. 1872 I, p. 217.
Matthew, W. D. 1899 A, p. 40.
Roger, O. 1896 A, p. 42.
Schlosser, M. 1890 B, p. 64.
Trouessart, E. L. 1897 A, p. 237.
Eocene (Bridger); Wyoming

CARCINODON Scott. Type *Mioclænus filholianus* Cope.

Scott, W. B. 1892 B, p. 323.
Matthew, W. D. 1897 C, p. 293.
1899 A, p. 28.
Zittel, K. A. 1893 B, p. 586.

A genus of uncertain position placed by Matthew in Creodonta, "incertæ sedis."

Carcinodon filholianus (Cope).

Cope, E. D. 1888 CC, pp. 303, 329. (Mioclænus.)
Matthew, W. D. 1897 C, pp. 264, 293.
1899 A, p. 28.
Roger, O. 1896 A, p. 41.
Scott, W. B. 1892 B, p. 323.
Trouessart, E. L. 1897 A, p. 237.

Eocene (Puerco); New Mexico.

PARADOXODON Scott. Type *Chriacus rütimeyeranus* Cope.

Scott, W. B. 1892 B, p. 322.
1892 D, p. 80.
Zittel, K. A. 1893 B, p. 586.

A genus of uncertain position.

Parodoxodon rütimeyeranus (Cope).

Cope, E. D. 1888 CC, pp. 304, 323. (Chriacus.)
Matthew, W. D. 1899 A, p. 28. (Mioclænus.)
Roger, O. 1896 A, p. 41.
Scott, W. B. 1892 B, p. 323.
Trouessart, E. L. 1897 A, p. 237.

Eocene (Puerco); New Mexico.

Suborder FISSIPEDIA.

Cope, E. D. 1882 D, pp. 471, 473.
1888 W, p. 1019. (Carnivora vera.)
1889 R, p. 876.
1898 B, p. 118.
Flower, W. H. 1876 B, xiii, p. 487. (Carnivora vera.)
1883 D, p. 433.
Gill, T. 1872 A, p. 297.
1872 B, p. 56.
Gill and Coues 1877 A, p. 1005. [Feræ (Fissipedia).]
Huxley, T. H. 1872 A, p. 351.
Lydekker, R. 1896 B.
Nicholson and Lydekker 1889 A, p. 1424. (Carnivora vera.)
Weber, M. 1886 A, p. 227.
Woodward, A. S. 1898 B, p. 389. (Carnivora vera.)
Zittel, K. A. 1893 B, pp. 606, 678.

Superfamily ARCTOIDEA.

Flower, W. H. 1869 B, p. 15.
Cope, E. D. 1882 D, p. 473. (Hypomycteri, in part.)
1884 O, pp, 890, 892. (Hypomycteri, in part.)
Flower, W. H. 1883 D, p. 439.
Flower and Lydekker 1891 A, p. 556.
Huxley, T. H. 1872 A, p. 358.
Mivart, St. G. 1881 A, p. 474.
1885 B, p. 340.
Schlosser, M. 1888 B, p. 6.
Tims, H. W. M. 1896 B, p. 462.
Tomes, C. S. 1898 A, p. 472.

URSIDÆ.

Albrecht, P. 1879 A.
Baird, S. F. 1857 A, p. 206.
Blainville, H. M. D. 1864 A, ii, K, pls. i-xviii.
Cope, E. D. 1882 D, p. 473.
1884 O, p. 892.
Cuvier, G. 1834 A, ii, p. 171.
Delbos, J. 1858 A.
1860 A.
1860 B.
Flower, W. H. 1869 A, p. 277.
1876 B, xiii, p. 488.
1883 D, p. 441.
1885 A.
Flower and Lydekker 1891 A, p. 557.
Gadow, H. 1898 A, p. 50.
Gill, T. 1872 B, pp. 58, 66.
Gray, J. E. 1869 A, p. 215.
Haeckel, E. 1895 A, p. 585. (Ursida.)
Lydekker, R. 1884 A, p. 202.
1885 B p. 106, in part.
Mivart, St G 1885 B p. 394
Nicholson and Lydekker 1889 A, p. 1430.
Owen, R. 1843 A, p. 62.
Owen, R. 1845 B, p. 501.
1866 B, p. 490.
1868 A, p. 335.
Pictet, F. J. 1853 A, p. 183.
Roger, O. 1896 A, p. 52.
Schlosser, M. 1888 A.
1888 B, pp. 3, 14, 15.
1899 B, p. 95.
Scott, W. B. 1888 A.
1892 A.
Steinmann and Döderlein 1890 A, p. 721.
Tornier, G. 1888 A.
1890 A.
Trouessart, E. L. 1897 A, p. 238.
Turner, H. N. 1848 A.
Waterhouse, G. R. 1839 A.
Weyhe, — 1875 A, p. 117.
Winge, H. 1895 B, pp. 47, 63, 91. (Ursidæ, Ursini.)
Woodward, A. S. 1898 B, p. 394.
Zittel, K. A 1893 B, p. 639.

URSUS Linn. Type *U. arctos* Linn.

Linnæus, *C.*, 1758, Syst. Nat., ed. 10, i, p. 47.
Allen, H. 1888 A.
Baird, S. F. 1857 A, p. 216.
Blainville, H. M. D. 1864 A, ii, K, pls. i-xviii.
Burmeister, H. 1879 B, p. 169.
Delbos, J. 1858 A.
1860 A.
1860 B.
Flower, W. H. 1869 B. p. 6.
1883 D, p. 441.
1885 A.
Flower and Lydekker 1891 A, p. 557.
Gray, J. E. 1869 A, p. 218.
Lydekker, R. 1884 A, p. 206.
1885 B, p. 159.
Merriam, C. H. 1896 A.
Middendorff, A. T. 1850 A.
Mivart, St. G. 1885 B, p. 389.
Nicholson and Lydekker 1889 A, p. 1431.
Owen, R. 1843 A, p. 62.
1846 B, p. 77.
1866 B, p. 490.
1868 A, p. 335.
Pictet, F. J. 1853 A, p. 185.
Schlosser, M. 1888 B, p. 88.
1899 B, p. 95.
1900 A, p. 261.
Scott, W. B. 1892 A, p. 425.
Steinmann and Döderlein 1890 A, p. 722
Trouessart, E. L. 1897 A, p. 238.
Turner, H. N. 1848 A, p. 75.
Zittel, K. A. 1893 B, p. 641.

Ursus americanus Pallas.

Allen, J. A. 1876 C, p. 333.
Baird, S. F. 1857 A, p. 225, pl. xliii, figs. 10, 13.
Cope, E. D. 1869 E, p. 176.
1895 F, p. 447.
Harlan, R. 1835 C, p. 329.
Leidy, J. 1853 B, p. 303. ("Ursus.")
1856 T, p. 169.
1859 F, p. 111.
1869 A, p. 369.
Merriam, C. H. 1896 A.
Miller, G. S. 1899 A, p. 54. (U. americanus fossilis.)
Pictet, F. J. 1853 A, p. 189.
Trouessart, E. L. 1897 A, p. 243.
Wailes, B. L. C. 1854 A, p. 286. (U. americanus fossilis.)

Recent; North America. Pleistocene; Kentucky, Mississippi, Pennsylvania.

Ursus amplidens Leidy.

Leidy, *J.* 1853 B, p. 303.
Cope, E. D. 1869 E, p. 176.
Forshey, C. G. 1846 A, p. 163. ("Polar bear;" species problematical.)
Leidy, J. 1856 T, p. 168, pl. xvii, figs. 13-16.
1869 A, p. 370.
Merriam, C. H. 1896 A.
Miller, G. S. 1899 A, p. 54.
Roger, O. 1896 A, p. 55. (Arctotherium.)
Trouessart, E. L. 1897 A, p. 243.
Wailes, B. L. C. 1854 A, p. 286.
Wortman, J. L. 1882 A. (U. amplidens=U. ferox.)
Zittel, K. A. 1893 B, p. 643.

Pleistocene; Mississippi, Virginia.

Ursus procerus Miller.

Miller, *G. S.* 1899 A, p. 55.

Pleistocene; Ohio.

ARCTODUS Leidy. Type *A. pristinus* Leidy.

Leidy, *J.* 1854 C, p. 90.
Ameghino, F. 1889 A, p. 315. (Arctotherium.)
Bravard, 1860, Cat. Foss. Amer. Merid., p. 8. (Arctotherium.)
Cope, E. D. 1871 I, p. 96. (Ursus.)
1899 A, p. 221. (Tremarctos.)
Flower and Lydekker 1891 A, p. 561. (Arctotherium.)
Gervais, P., 1855, Hist. Nat. Mamm., ii, p. 20. (Tremarctos, type *T. ornatus*.)
Gervais and Ameghino 1880 A, p. 23. (Arctotherium.)
Lydekker, R. 1884 A, p. 236. (Arctotherium.)
1885 B, p. 157. (Arctotherium.)
Nicholson and Lydekker 1889 A, p. 1429 (Arctodus); p. 1432 (Arctotherium).
Steinmann and Döderlein 1890 A, p. 722. (Arctotherium.)
Zittel, K. A. 1893 B, p. 641. (Arctotherium.)

Arctodus haplodon (Cope).

Cope, *E. D.* 1896 F, p. 383. [Ursus (Tremarctus).]
1871 F, p. 15. (Ursus pristinus, not of Leidy.)
1871 I, p. 96. (Ursus pristinus.)
1871 P, p. 58. (Ursus pristinus.)
1895 F, p. 447. (Arctotherium pristinum.)
Cope, E. D. 1899 A, p. 220, pl. xix, figs. 2, 2*a*. (Ursus.)
Miller, G. S. 1899 A, p. 54. (Ursus.)
Trouessart, E. L. 1897 A, p. 245. (Tremarctos.)
Wheatley, C. M. 1871 A. (Ursus pristinus.)

Pleistocene (Port Kennedy Cave); Pennsylvania.

Arctodus pristinus Leidy.

Leidy, *J.* 1854 C, p. 90. (Arctodus.)
Cope, E. D. 1896 F, p. 383. (Ursus.)
1899 A, p. 221. (Ursus.)
Leidy, J. 1860 B, p. 115, pl. xxiii, figs. 3, 4. (Arctodus.)
1869 A, p. 370. (Arctodus.)
Miller, G. S. 1899 A, p. 54. (Arctodus.)
Roger, O. 1896 A, p. 55. (Arctodus.)
Trouessart, E. L. 1897 A, p. 246. (Tremarctos.)

Pleistocene; South Carolina.

Arctodus simus (Cope).

Cope, *E. D.* 1879 U, p. 791. (Arctotherium.)
1891 K, p. 997, pl. xxi. (Arctotherium.)
1899 A, p. 221. (Ursus.)
Miller, G. S. 1899 A, p. 54. (Arctotherium.)
Roger, O. 1896 A, p. 54. (Arctotherium.)
Trouessart, E. L. 1897 A, p. 245. (Tremarctos.)

Pleistocene; California.

PROCYONIDÆ.

Albrecht, P. 1879 A.
Allen, H. 1880 A.
Cope, E. D. 1880 D, p. 838.
1881 C, p. 165.
1882 D, p. 473.
1884 E.
1884 O, p. 892.
Flower, W. H. 1869 B, p. 5.
1883 D, p. 440.
Flower and Lydekker 1891 A, p. 562.
Gill, T. 1872 B, pp. 58, 67.
Gray, J. E. 1869 A, p. 242.
Haeckel, E. 1895 A, p. 585. (Procyonida.)
Huxley, T. H. 1880 A.
Mivart, St. G. 1885 B, p. 393.
Nicholson and Lydekker 1889 A, 1429.
Roger, O. 1896 A, p. 55.
Schlosser, M. 1888 B, p. 3 (Subursi); p. 12 (Procyonidæ).
1890 B, p. 23. (Subursi.)
1899 A, p. 94. ("Subursen.")
Scott, W. B. 1892 A, p. 426.
Trouessart, E. L. 1897 A, p. 248.
Winge, H. 1895 B, pp. 47, 63, 91.
Wortman and Matthew 1899 A, p. 129.
Zittel, K. A. 1893 B, p. 644.

CERCOLEPTINÆ.

Blainville, H. M. D. 1864 A, ii, L, p. 20, pls. v, vii-x.
Cope, E. D. 1882 D, p. 473. (Cercoleptidæ.)
1884 O, p. 892. (Cercoleptidæ.)
Gill, T. 1872 B, pp. 58, 67 (Cercoleptidæ); pp. 59, 67 (Bassarididæ).
Trouessart, E. L. 1897 A, p. 245.

LEPTARCTUS Leidy. Type *L. primus* Leidy.

Leidy, J. 1856 Q, p. 311.
1871 C, p. 344.
Lydekker, R. 1884 A, p. 204.
Nicholson and Lydekker 1889 A, p. 1429.
Schlosser, M. 1899 A, p. 84.
Wortman, J. L. 1894 B, p. 229.
Zittel, K. A. 1893 B, p. 645.

Leptarctus primus Leidy.

Leidy, J. 1856 Q, p. 311.
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 430.
Leidy, J. 1869 A, pp. 70, 370, pl. i, figs. 15, 16.
1871 C, p. 344.
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 55.
Schlosser, M. 1899 A, p. 84.
Trouessart, E. L. 1897 A, p. 248.
Wortman, J. L. 1894 B, p. 229.
Zittel, K. A. 1893 B, p. 645.
Miocene (Loup Fork); South Dakota.

BASSARISCUS Coues. Type *Bassaris astuta* Licht.

Coues, E., 1887, Science (2), ix, p. 516.
Allen, J. A. 1879 A, p. 331. (Bassaris.)
Baird, S. F. 1857 A, p. 147. (Bassaris.)
Flower, W. H. 1869 B, p. 31. (Bassaris.)
Mivart, St. G. 1885 B, p. 361. Bassaris.)
Schlosser, M. 1890 B, p. 4. (Bassaris.)
1890 C, p. 267. (Bassaris.)
1899 A, p. 86. (Bassaris.)
Winge, H. 1895 B, pp. 47, 64, 102, 103. (Bassaris.)
Wortman and Matthew 1899 A, p, 134.

Bassariscus astutus (Licht.).

Allen, J. A. 1879 A, p. 325. (Bassaris.)
Baird, S. F. 1857 A, p. 147, pl. lxxiv, fig. 2. (Bassaris.)
Cope, E. D. 1895 F, p. 447.
Flower, W. H. 1869 B, p. 10, fig. 3a. (Bassaris.)
Trouessart, E. L. 1897 A, p. 249.
Recent; Mexico to Oregon. Pleistocene (Port Kennedy); Pennsylvania, *fide* Cope.

PROCYONINÆ.

PROCYON Storr. Type *Ursus lotor* Linn.

Storr, G. C. 1780, Prod. Meth. Mamm., p. 35.
Baird, S. F. 1857 A, p. 207.
Blainville, H. M. D. 1864 A, ii, L, p. 13, pls. iii, vi.
Flower, W. H. 1869 B, p. 9.
1883 D, p. 440.
Flower and Lydekker 1891 A, p. 564.
Giebel, C. G. 1857 A, p. 349.
Gray, J. E. 1869 A, p. 242.
Huxley, T. H. 1880 A.
Mivart, St. G. 1885 B, p. 346.
Nicholson and Lydekker 1889 A, p. 1429.
Owen, R. 1868 A, p. 334.
Schlosser, M. 1890 B, p. 23.
Scott, W. B. 1892 A, p. 426.
Winge, H. 1895 B, pp. 47, 65, 91.
Wortman and Matthew 1899 A, p. 133.
Zittel, K. A. 1893 B, p. 644.

Procyon lotor (Linn.).

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 48. (Ursus.)
Allen, J. A. 1876 C, p. 333.
Baird, S. F. 1857 A, p. 209.
Cope, E. D. 1869 E, p. 176.
Flower, W. H. 1869 B, p. 10, fig. 3.
Giebel, C. G. 1857 A, p. 349.
Leidy, J. 1860 B, p. 115, pl. xxiii, fig. 1.
1869 A, p. 370.
1889 H, p. 5.

Trouessart, E. L. 1897 A, p. 251.
Recent; Central and North America. Pleistocene; South Carolina, Virginia, Pennsylvania, New Jersey.

Procyon priscus Le Conte.

Le Conte, J. L. 1848 A, p. 106.
Cope, E. D. 1869 E, p. 176.
Leidy, J. 1856 T, p. 169, pl. xvii, figs. 17-24.
1862 A.
1869 A, p. 370.
1870 H, p. 13.
Pictet, F. J. 1853 A, p. 191.
Roger, O. 1896 A, p. 55.
Trouessart, E. L. 1897 A, p. 251.
Pleistocene; Galena, Illinois.

PHLAOCYON Matth. Type *P. leucosteus* Matth.

Matthew, W. D. 1899 A, p. 54.
Wortman and Matthew 1899 A, p. 129.

Phlaocyon leucosteus Matth.

Matthew, W. D. 1899 A, p. 54.
Wortman and Matthew 1899 A, pp. 129, 131, pl. vi.
Oligocene (White River); Colorado.

MYXOPHAGUS Cope. Type *M. spelæus* Cope.

Cope, E. D. 1869 E, p. 176.

Myxophagus spelæus Cope.

Cope, E. D. 1869 E, p. 176, pl. iii, figs. 2, 2*a*.
1869 J, p. 3. (No description.)
Leidy, J. 1869 A, p. 445.
Roger, O. 1896 A, p. 55.
Trouessart, E. L. 1897 A, p. 252.
Pleistocene; Virginia.

MUSTELIDÆ.

Albrecht, P. 1879 A.
Baird, S. F. 1857 A, p. 148.
Blainville, H. M. D. 1864 A, ii M, pls. i-xiv.
Cope, E. D. 1875 L, p. 21.
1882 D, p. 473.
1884 O, p. 892.
Coues, E. 1877 A, pp. 1, 4.
Flower, W. H. 1869 B.
1883 D, p. 439.
Flower and Lydekker 1891 A, p. 567.
Gill, T. 1872 B, pp. 58, 64.
Gray, J. E. 1865 A, p. 100.
1869 A, p. 79.
Haeckel, E. 1895 A, p. 587. (Mustelida.)
Humphreys, J. 1889 A, p. 158.
Lydekker, R. 1884 A, p. 178.
Mayer, P. 1886 A, p. 276.
Mivart, St. G. 1885 B, p. 393.
Nicholson and Lydekker 1889 A, p. 1426.
Owen, R. 1845 B, p. 494.
1868 A, p. 333.
Roger, O. 1896 A, p. 56.
Schlosser, M. 1888 B, pp. 3, 14, 107.
1890 C, p. 265.
Scott, W. B. 1892 A, p. 426.
Steinmann and Döderlein 1890 A, p. 723.
Tomes, C. S, 1898 A, p. 472.
Trouessart, E. L. 1897 A, p. 252.
Turner, H. N. 1848 A.
Waterhouse, G. R. 1839 A.
Winge, H. 1895 B, pp. 47, 65, 69, 91.
Woodward, A. S. 1898 B, p. 396.
Zittel, K. A. 1893 B, pp. 645, 654.

MELINÆ.

Blainville, H. M. D, 1864 A, ii, L, p. 2, pls. ii, vi, xii. (Genus Meles.)
Baird, S. F. 1857 A, p. 190.
Coues, E. 1877 A, pp. 5, 9, 10. (Melinæ, Mephitinæ.)
Flower, W. H. 1883 D, p. 439.
Flower and Lydekker 1891 A, p. 572.
Gill, T. 1872 B, p. 64 (Melinæ); p. 65 (Mephitinæ).
Mivart, St. G. 1885 B, p. 394.
Moseley and Lankester 1868 A. (Genus Meles.)
Owen, R. 1868 A, p. 333. (Melidæ.)
Roger, O. 1896 A, p. 60.
Trouessart, E. L. 1897 A, p. 252.
Winge, H. 1895 B, p. 47. (Melini.)
Zittel, K. A. 1893 B, p. 650.

TAXIDEA Storr. Type *Ursus taxus* Schreber.

Storr, G. C. 1780, Prod. Meth. Mamm., p. 34.
Baird, S. F. 1857 A, p. 201.
Flower, W. H. 1869 B, p. 11.
1883 D, p. 440.
Flower and Lydekker 1891 A, p. 576.
Gray, J. E. 1865 A, p. 140.
1869 A, p. 129.
Mivart, St. G. 1885 B, p. 367.
Owen, R. 1868 A, p. 333.
Waterhouse, G. R., 1838, Trans. Zool. Soc. Lond., ii, pp. 343.
Winge, H. 1895 B, p. 68.

Taxidea taxus (Schreber).

Baird, S. F. 1857 A, p. 202. (T. americana.)
Cope, E. D. 1899 A, p. 239. (T. americana.)
Gray, J. E. 1865 A, p. 141. (T. americana.)
Mivart, St. G. 1885 B, p. 367. (T. americana.)
Recent. Ohio to Oklahoma, north to Hudson Bay. Pleistocene; Pennsylvania.

Taxidea sulcata Cope.

Cope, E. D. 1878 C, p. 227.
1889 F, p. 162. (Syn. of T. americana.)
Roger, O. 1896 A, p. 61.
Trouessart, E. L. 1897 A, p. 252.
Pleistocene (Equus beds); State of Washington.

MEPHITIS Cuvier. Type "*Les Moufettes.*"

Cuvier, G. 1800, Leçons d'Anat. Comp., i, tabl. i.
Ameghino, F. 1889 F, p. 322.
Baird, S. F. 1857 A, p. 191.
Blainville, H. M. D. 1864 A, ii, M, p. 19, pls. i, ix–xiv.
Burmeister, H. 1879 B, p. 162.
Cope, E. D. 1899 A, p. 232.
Coues, E. 1875 A.
Filhol, H. 1891 A, p. 109.
Flower, W. H. 1869 B, p. 11.
1883 D, p. 439.
Flower and Lydekker 1891 A, p. 572.
Gray, J. E. 1865 A, p. 147.
1869 A, p. 136.
Mivart, St. G. 1885 B, p. 370.
Schlosser, M. 1888 B, pp. 113, 114, 140.
Trouessart, E. L. 1897 A, p. 259.
Winge, H. 1895 B, pp. 68, 79.
Zittel, K. A. 1893 B, p. 652.

Mephitis fossidens Cope.

Cope, E. D. 1896 F, p. 386.
1899 A, pp. 231, 232, 233, pl. xviii, fig. 7.
Trouessart, E. L. 1897 A, p. 259.
Pleistocene; Pennsylvania.

Mephitis frontata Coues.

Coues, E. 1875 A, p. 7, fig. 1.
Allen, J. A. 1876 C, p. 333. (Syn. of M. mephitica.)
Coues, E. 1877 A, p. 193.
Trouessart, E. L. 1897 A, p. 260. (M. mephitica frontata.)
Pleistocene; Pennsylvania.

Mephitis leptops Cope.

Cope, E. D. 1899 A, pp. 232, 235, pl. xviii, figs. 9, 9a.
Pleistocene; Pennsylvania.

Mephitis mephitica (Shaw).

Allen, J. A. 1876 C, p. 333.
Baird, S. F. 1857 A, p. 195, pl. lx, fig. 1.
Cope, E. D. 1895 F, p. 447.
1899 A, p. 232.
Coues, E. 1875 A, p. 8.
1877 A, p. 195. (Synonymy and literature.)
Leidy, J. 1889 H, p. 5.
Trouessart, E. L. 1897 A, p. 259.
Recent; Louisiana northward to Nova Scotia and Saskatchewan. Pleistocene; Pennsylvania, *fide* Allen.

Mephitis obtusata Cope.

Cope, E. D. 1899 A, p. 236.
Pleistocene; Pennsylvania.

Mephitis orthrostica Cope.

Cope, E. D. 1896 F, p. 389.
1899 A, p. 234, pl. xviii, figs. 8, 8a.
Trouessart, E. L. 1897 A, p. 259.
Pleistocene; Pennsylvania.

SPILOGALE Gray. Type *Mephitis interrupta* Raf.

Gray, J. E. 1865 A, p. 150.
Coues, E. 1877 A, p. 192. (Subgenus.)
Flower and Lydekker 1891 A, p. 574.
Merriam, C. H., 1890, N. A. Fauna, no. 4, p. 7.
Trouessart, E. L. 1897 A, p. 262.

Spilogale perdicida Cope.

Cope, E. D. 1869 E, p. 177, pl. iii, fig. 1. (Galera.)
1869 J, p. 3. (Hemiacis.)
Cope, E. D. 1896 F, p. 386. (Galera.)
Coues, E. 1875 A, p. 8. (Mephitis.)
1877 A, p. 18. (Spilogale putorius?.)
Leidy, J. 1869 A, p. 445. (Galera.)
Roger, O. 1896 A, p. 60. (Galictis.)
Trouessart, E. L. 1897 A, p. 262. (Syn. of S. putorius.)
Pleistocene; Virginia.

OSMOTHERIUM Cope. Type *O. spelæum* Cope.

Cope, E. D. 1896 F, p. 385.
1899 A, p. 230.

Osmotherium spelæum Cope.

Cope, E. D. 1896 F, p. 385.
Cope, E. D. 1899 A, p. 231, pl. xviii, fig. 6.
Trouessart, E. L. 1897 A, p. 260.
Pleistocene; Pennsylvania.

PELYCICTIS Cope. Type *P. lobulatus* Cope.

Cope, E. D. 1896 F, p. 390.
1899 A, p. 237.

Pelycictis lobulatus Cope.

Cope, E. D. 1896 F, p. 390.
Cope, E. D. 1899 A, p. 237, pl. xviii, fig. 10; text figure.
Trouessart, E. L. 1897 A, p. 260.
Pleistocene; Pennsylvania.

MUSTELINÆ.

Baird, S. F. 1857 A, p. 148. (Martinæ.)
Flower, W. H. 1883 D, p. 440.
Flower and Lydekker 1891 A, p. 579.
Gill, T. 1872 B, p. 64.
Lydekker, R. 1884 A, p. 178.
Mivart, St. G. 1885 B, p. 394.
Roger, O. 1896 A, p. 56.
Trouessart, E. L. 1897 A, p. 263.
Turner, H. N. 1848 A.
Winge, H. 1895 B, pp. 47, 66, 69.
Zittel, K. A. 1893 B, p. 646.

BUNÆLURUS Cope. Type *B. lagophagus* Cope.

Cope, E. D. 1873 CC. p. 8.
1874 B, p. 507.
1884 O, p. 946.
Trouessart, E. L. 1897 A, p. 264 (Bunælurus); p. 268 (Syn. of Palæogale).

Bunælurus lagophagus Cope.

Cope, E. D. 1873 CC, p. 8.
1873 CC, p. 10. (Canis osorum.)
1874 B, p. 507 (Canis osorum); p. 508 (B. lagophagus).
Cope, E. D. 1884 O, p. 946, pl. lxviia, figs. 13, 14 (Bunælurus; Plesiogale, on plate); p. 947, pl. lxviia, fig. 12 (B. osorum).
Matthew, W. D. 1899 A, p. 54.
Roger, O. 1896 A, p. 44 (Daphænos osorum); p. 59 (Bunælurus lagophagus).
Scott, W. B. 1893 A.
Trouessart, E. L. 1897 A, p. 264 (B. lagophagus, B. osorum); p. 296 (Daphænos osorum).
Zittel, K. A. 1893 B, p. 649.
Oligocene (White River); Colorado.

GALICTIS Bell. Type *Viverra vittata* (Schreber).

Bell, T., 1826, Zool. Journ., ii, p. 551.
Burmeister, H. 1879 B, p. 156.
Cope, E. D. 1867 C, p. 156. (Galera.)
Coues, E. 1877 A, p. 17.
Flower, W. H. 1869 B, p. 12. (Galera.)
Flower and Lydekker 1891 A, p. 579.
Gray, J. E. 1865 A, p. 121. (Galera.)
Mivart, St. G. 1885 B, p. 376.
Nehring, A. 1886 A, p. 177.
Nicholson and Lydekker 1889 A, p. 1428.
Schlosser, M. 1888 B, p. 114.
Zittel, K. A. 1893 B, p. 650.

Galictis macrodon Cope.

Cope, E. D. 1867 C, p. 155. (Galera.)
Cope and Wortman 1884 A, p. 5.
Coues, E. 1877 A, p. 17. (Galera.)
Leidy, J. 1869 A, p. 369, pl. xxx, figs. 1-3. (Galera.)
Roger, O. 1896 A, p. 60.
Trouessart, E. L. 1897 A, p. 264.
Wortman, J. L. 1883 B, p. 1001. (Putorius.)
Pleistocene; Maryland.

STENOGALE Schlosser. Type, none designated.

Schlosser, M. 1888 B, pp. 110, 116, 151.
Cope, E. D. 1890 I, p. 950.
Zittel, K. A. 1893 B, p. 647.

Stenogale robusta Cope.

Cope, E. D. 1890 I, p. 950.
Matthew, W. D. 1899 A, p. 68.
Trouessart, E. L. 1897 A, p. 267.
Miocene (Loup Fork); Nebraska.

PARICTIS Scott. Type *P. primævus* Scott.

Scott, W. B. 1893 A, p. 658. (Parietis, error.)

Parictis primævus Scott.

Scott, W. B. 1893 A, p. 658. (Parietis princeous, error.)
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 57.
Trouessart, E. L. 1897 A, p. 267.
Miocene (John Day); Oregon.

MUSTELA Linn. Type *M. martes* Linn.

Linnæus, C., 1758, Syst. Nat. ed. 10, i, p. 45.
Baird, S. F. 1857 A, p. 149.
Blainville, H. M. D. 1864 A, ii, M, plates.
Coues, E. 1877 A, p. 59.
Filhol, H. 1891 A, p. 94.
Flower, W. H. 1869 B, p. 13.
Flower and Lydekker 1891 A, p. 94.
Gray, J. E. 1865 A, p. 110.
Lydekker, R. 1885 B, p. 176.
Mivart, St. G. 1885 B, p. 378.
Nicholson and Lydekker 1889 A, p. 1428.
Owen, R. 1868 A, p. 333.
Zittel, K. A. 1893 B, p. 648.

Mustela americana Turton.

Allen, J. A. 1876 C, p. 333.
Baird, S. F. 1857 A, p. 152, pl. xxxvii, fig. 1.
Coues, E. 1877 A, p. 81, pl. v. (Synonymy and literature.)
Gray, J. E. 1865 A, p. 106. (Martes.)
Trouessart, E. L. 1897 A, p. 272.
Recent; North America. Pleistocene or Recent, in caves; Pennsylvania, *fide* Allen.

Mustela diluviana Cope.

Cope, E. D. 1899 A, p. 229, pl. xviii, figs. 5, 5*a*.
Pleistocene; Pennsylvania.

Mustela parviloba (Cope).

Cope, E. D. 1873 C, p. 1. [Ælurodon mustelinus; not Mustela (Plesiogale) mustelina of Pomel.]
1874 B, p. 520. (Martes mustelinus.)
1874 P, p. 11. (Martes mustelinus.)
Coues, E. 1877 A, p. 16. (Mustela mustelina.)
Matthew, W. D. 1899 A, p. 68.
Roger, O. 1896 A, p. 59. (Mustela mustelina.)
Scott and Osborn 1890 B, p. 71. ("M. parviloba Cope.")
Trouessart, E. L. 1897 A, p. 272. (M. parviloba.)
Miocene (Loup Fork); Colorado, Nebraska.

Mustela pennantii Erxleben.

Erxleben, C. P., 1777, Syst. Regn. Anim., p. 470.
Allen, J. A. 1876 C, p. 333.
Baird, S. F. 1857 A, p. 149, pl. xxxvi, fig. 1.
Coues, E. 1877 A, p. 62, pl. ii. (Synonymy and literature.)
Gray, J. E. 1865 A, p. 107. (Martes.)
Trouessart, E. L. 1897 A, p. 272.

PUTORIUS[1] Cuv. Type *Mustela putorius* Linn.

Baird, S. F. 1857 A, p. 159.
Coues, E. 1877 A, p. 96.
Flower, W. H. 1883 D, p. 440.
Flower and Lydekker 1891 A, p. 585.
Gervais, P. 1859 A, p. 251.
Gray, J. E. 1865 A, p. 109.
1869 A, p. 87.
Mivart, St. G. 1885 B, p. 379.
Owen, R. 1843 A, p. 70.
Schlosser, M. 1888 B, p. 111.
Scott, W. B. 1888 A.
Trouessart, E. L. 1897 A, p. 278.
Zittel, K. A. 1893 B, p. 649.

Putorius nambianus Cope.

Cope, E. D. 1874 I, p. 147. (Martes.)
Cope, E. D. 1874 O, p. 16. (Martes.)
1875 F, p. 68. (Mustela.)
1877 K, p. 305, pl. lxix, fig. 3.
Coues, E. 1877 A, p. 16. (Mustela.)
Matthew, W. D. 1899 A, p. 68.
Roger, O. 1896 A, p. 59. (Mustela).
Trouessart, E. L. 1897 A, p. 275.
Miocene (Loup Fork); New Mexico.

Putorius vison (Schreber).

Allen, J. A. 1876 C, p. 333.
Baird, S. F. 1857 A, p. 177, pl. xxxvii, figs. 2, 3.
Coues E. 1877 A, p. 160. (Synonymy and literature.)
Trouessart, E. L. 1897 A, p. 274.
Recent; North America. In caves of Pennsylvania, *fide* Allen.

GULO Storr. Type *Ursus luscus* Linn.

Baird, S. F. 1857 A, p. 180.
Blainville, H. M. D. 1864 A, ii M, p. 21, pls. iii, vii, ix-xiv.
Flower, W. H. 1869 B.
Flower and Lydekker 1891 A, p. 591.
Gervais, P. 1859 A, p. 247.
Gray, J. E. 1865 A, p. 120.
Mivart, St. G. 1885 B, p. 381.
Zittel, K. A. 1893 B, p. 649.

Gulo luscus (Linn).

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 47 (Ursus.)
Baird, S. F. 1857 A, p. 181.
Cope, E. D. 1899 A, p. 229.
Flower and Lydekker 1891 A, p. 591.
Recent; northern parts of North America. Pleistocene; Pennsylvania.

LUTRINÆ.

Albrecht, P. 1879 A. (Lutridæ.)
Baird, S. F. 1857 A, p. 183.
Coues, E. 1877 A, pp. 5, 293.
Flower, W. H. 1883 D, p. 439.
Flower and Lydekker 1891 A, p. 567.
Gill, T. 1872 B, pp. 65, 66.
Gray, J. E. 1865 A, p. 123. (Lutrina.)
Lydekker, R. 1884 A, p. 187.
Mivart, St. G. 1885 B, p. 394.
Nicholson and Lydekker 1889 A, p. 1426.
Roger, O. 1896 A, p. 62.
Trouessart, E. L. 1897 A, p. 281.
Winge, H. 1895 B, pp. 47, 70. (Lutrini.)
Zittel, K. A. 1893 B, p. 652.

POMATOTHERIUM E. Geoffroy. Type *P. valetoni* E. Geoffroy.

Geoffroy, E., 1833, Rev. Encyc., lix, p. 80.
Cope, E. D. 1890 I, p. 951. (Brachypsalis, type *B. pachycephalus.*)
1896 F, p. 385.
1899 A, p. 230.
Lydekker, R. 1885 B, p. 190. (Syn. of Lutra.)
Meyer, H. 1847, p. 182. (Stephanodon.)
Nicholson and Lydekker 1889 A, p. 1427.
Pomel, A. 1847 C, p. 380. (Lutrictis, type *Lutra valetoni.*)
1853 A, p. 46. (Lutrictis.)
Schlosser, M. 1888 B, p. 112.
Zittel, K. A. 1893 B, p. 652. (Pomatotherium, Brachypsalis.)

Pomatotherium pachycephalum Cope.

Cope, E. D. 1890 I, p. 951. (Brachypsalis.)
1896 F, p. 385. (Pomatotherium?.)
Matthew, W. D. 1899 A, p. 68. (Brachypsalis pachygnathus.)
Roger, O. 1896 A, p. 62. (Brachypsalis.)
Trouessart, E. L. 1897 A, p. 281.
Miocene (Loup Fork); Nebraska.

LUTRA Brisson. Type *Mustela lutra* Linn.

Brisson, A. D., 1762, Regn. Anim., p. 201.
Baird, S. F. 1857 A, p. 184.
Barnston, G. 1863 A.
Blainville, H. M. D. 1864 A, ii, M, p. 26, pls. v, viii, ix-xiv.
Burmeister, H. 1879 B, p. 165.
Coues, E. 1877 A, p. 294.
Flower, W. H. 1869 B.
1883 D, p. 439.
Flower and Lydekker 1891 A, p. 467.
Gray, J. E. 1865 A, p. 125.
1869 A, p. 103.
Lydekker, R. 1884 A, p. 187.
1885 B, p. 190.

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[1] *Putorius erminius* has been reported by Leidy (1889 H, p. 5) from a cave in Pennsylvania, in which by far the greater number of animals belong to species now living in the vicinity.

Martin, W. 1836 A
Mivart, St. G. 1885 B, p. 383.
Nicholson and Lydekker 1889 A, p. 1427.
Owen, R. 1846 B, p. 119.
 1866 B, p. 491.
Schlosser, M. 1888 B, p. 112.
Winge, H. 1895 B, pp. 69, 91.
Zittel, K. A. 1893 B, p. 653.

Lutra canadensis Schreber.

Allen, J. A. 1876 C, p. 333.
Baird, S. F. 1857 A, p. 184, pl. xxxviii.
Coues, E. 1877 A, p. 295, pl. xvii. (Synonymy and literature.)
Trouessart, E. L. 1897 A, p. 285.
 Recent; North America. In caves of Pennsylvania, *fide* Allen.

Lutra piscinaria Leidy.

Leidy, J. 1873 B, p. 316, pl. xxxi, fig. 4; p. 230.
Cope, E. D. 1878 H, p. 389. (Lutra, "near piscinaria.")
 1889 F.
 1889 S, p. 980.
Coues, E. 1877 A, p. 323.
Roger, O. 1896 A, p. 62.
Trouessart, E. L. 1897 A, p. 285.
 Pliocene; Idaho.

Lutra rhoadsii Cope.

Cope, E. D. 1896 F, p, 391.
 1899 A, p. 238, pl. xviii, fig. 11.
Trouessart, E. L. 1897 A, p. 285.
 Pleistocene; Pennsylvania.

LUTRICTIS Cope. Type *L. lycopotamicus* Cope.

Cope, E. D. 1879 B, p. 66.

Lutrictis lycopotamicus Cope.

Cope, E. D. 1879 B, p. 66.
Matthew, W. D. 1899 A, p. 68.
Roger, O. 1896 A, p. 63. (Lutra.)
Trouessart, E. L. 1897 A, p. 285. (Lutra.)
Zittel, K. A. 1893 B, p. 654. (Lutra.)
 Miocene (Loup Fork); Oregon.

MEGENCEPHALON Osb., Scott, and Speir. Type *M. primævus* Osb., Scott, and Speir.

Osborn, Scott, and Speir 1878 A, p. 20.
Cope, E. D. 1879 W, p. 33.
Scott, W. B. 1888 B.

Megencephalon primævus Osb., Scott, and Speir.

Osborn, Scott, and Speir 1878 A, p. 20, pl. ix, fig. 8?.
Bruce, A. T. 1883 A, p. 39, pl. vii, fig. 6.
Cope, E. D. 1883 II, p. 970.
Roger, O. 1896 A, p. 63.
Trouessart, E. L. 1897 A, p. 287. (Megencephalum.)
 Eocene; Wyoming,

Superfamily CYNOIDEA Flower.

Flower, W. H. 1869 B, p. 24.
Cope, E. D. 1882 D, p. 473. (Hypomycteri, in part.)
 1884 O, pp. 890, 892. (Hypomycteri, in part).
Flower, W. H. 1883 D, p. 437.
Flower and Lydekker 1891 A, p. 544.
Gill, T. 1872 B, p. 63.
Huxley, T. H. 1872 A, p. 358.
Schlosser, M. 1888 B, p. 6.
Tims, H. W. M. 1896 B, p. 462.
Tomes, C. S. 1898 A, p. 464.
Zittel, K. A. 1893 B, p. 618.

CANIDÆ.

Baird, S. F. 1857 A, p. 102.
Blainville, H. M. D. 1864 A, ii, P, pls. i-xiv.
Cope, E. D. 1875 L, p. 21.
 1879 F.
 1881 C.
 1881 F.
 1882 D, p. 473.
 1883 T.
 1884 O, pp. 263, 892.
 1888 D.
Cuvier, G. 1834 A, vii, p. 464.
Filhol, H. 1883 A.
Flower, W. H. 1869 B, p. 24.
 1871 B.
 1883 D, p. 437.
Flower and Lydekker 1891 A, p. 544.
Gadow, H. 1898 A, p. 50.
Gill, T. 1872 B, pp. 57, 63.
Gray, J. E. 1868 B.
 1869 A, p. 178.
Haeckel, E. 1895 A, p. 585. (Canida.)
Humphreys, J. 1889 A, p. 155.
Huxley, T. H. 1872 A, p. 358.
 1880 A.
Lydekker, R. 1884 A, p. 240.
 1885 B, p. 106.
Mivart, St. G. 1881 A, pp. 479, 491.
Nicholson and Lydekker 1889 A, p. 1435.
Noack, T. 1894 A.
Owen, R. 1845 B, p. 475.
 1866 B.
 1868 A, p. 330.
Parsons, F. G, 1899 A.
 1900 A.
Roger, O. 1896 A, p. 42.
Schlosser, M. 1888 B, pp. 3, 14, 18.

Schmidt, O. 1886 A, p. 259.
Scott, W. B, 1890 C.
1891 A, p. 6.
1891 B, p. 373.
1891 C, p. 66.
1897 A.
1898 B.
Steinmann and Döderlein 1890 A, p. 719.
Tims, H. W. M. 1896 A.
1896 B, p. 445.
Tornier, G. 1888 A.
Trouessart, E. L. 1897 A, p. 288.
Turner, H. N. 1848 A.
Waterhouse, G. R. 1839 A.
Weyhe, — 1875 A, p. 116.
Wilckens, M. 1885 D.
Winge, H. 1895 B, pp. 47, 63. (Canini.)
Woodward, A. S. 1898 B, p. 389.
Wortman and Matthew 1899 A, p. 129.
Zittel, K. A. 1893 B, p. 619.

SIMOCYONINÆ.

Gill, T. 1872 B, pp. 59, 67. (Simocyonidæ.)
Roger, O. 1896 A, p. 50.
Trouessart, E. L. 1897 A, p. 291.

ENHYDROCYON Cope. Type *E. stenocephalus* Cope.

Cope, E. D. 1879 B, p. 56.
1879 F, pp. 179, 185.
1879 H, p. 181.
1881 C, p. 178.
1883 T, p. 245.
1884 O, pp. 893, 935.
Flower and Lydekker 1891 A, p. 562.
Nicholson and Lydekker 1889 A, p. 1433.
Schlosser, M. 1888 B, p. 61.
Scott, W. B. 1898 B, p. 414.
Wortman and Matthew 1899 A, p. 130.
Zittel, K. A. 1893 B, p. 633.

Enhydrocyon stenocephalus Cope.

Cope, E. D. 1879 B, p. 56.
1883 T, p. 245, fig. 12.
1884 O, p. 935, pl. lxix, figs. 3-5.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 51.
Trouessart, E. L. 1897 A, p. 291.
Miocene (John Day); Oregon.

HYÆNOCYON Cope. Type *H. basilatus* Cope.

Cope, E. D. 1879 E, p. 372.
1881 C, pp. 179, 181.
1881 P.
1883 T, p. 245.
1884 O, pp. 893, 942.
Flower and Lydekker 1891 A, p. 562.
Nicholson and Lydekker 1889 A, p. 1433.
Schlosser, M. 1888 B, p. 61.
1890 B, p. 26.
Wortman and Matthew 1899 A, p. 130.
Zittel, K. A. 1893 B, p. 633.

Hyænocyon basilatus Cope.

Cope, E. D. 1879 B, p. 57, part. (Enhydrocyon.)
1879 E, p. 372, in part.
1881 C, p. 181, in part.
1883 T, p. 246, fig. 3*c*.
1884 O, p. 942, pl. lxxv, fig. 3.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 50.
Schlosser, M. 1890 B, p. 25.
Trouessart, E. L. 1897 A, p. 292.
Miocene (John Day); Oregon.

Hyænocyon sectorius Cope.

Cope, E. D. 1883 T, p. 246, fig. 13*d*.
1879 B, p. 57, in part. (Enhydrocyon basilatus.)
1879 E, p. 372, in part. (E. basilatus.)
1881 C, p. 181, in part. (E. basilatus.)
1884 O, p. 943, pl. lxx, fig. 1.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 51.
Schlosser, M. 1890 B, p. 25.
Trouessart, E. L. 1897 A, p. 292.
Miocene (John Day); Oregon.

OLIGOBUNIS Cope. Type *Ictocyon crassivultus* Cope.

Cope, E. D. 1881 P, p. 497.
1883 T, p, 246.
1884 O, pp. 893, 939.
Nicholson and Lydekder 1889 A, p. 1433.
Schlosser, M. 1888 B, pp. 18, 60, 105.
Scott, W. B. 1898 B, p, 401.
Wortman and Matthew 1899 A, p. 131.
Zittel, K. A. 1893 B, p. 633.

Oligobunis crassivultus Cope.

Cope, E. D. 1879 F, p. 190. (Icticyon.)
Cope, E. D. 1881 C, p. 181. (Icticyon.)
1881 P, p. 497.
1883 T, p. 246, fig. 14,
1884 O, p. 940, pl. lxix, figs. 1, 2, text fig. 34.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 51.
Schlosser, M. 1888 B, p. 105.
Trouessart, E. L. 1897 A, p. 292.
Zittel, K. A. 1893 B, p. 633, fig. 530.
Miocene (John Day); Oregon.

CANINÆ.

Cope, E. D. 1879 F.
Gill, T. 1872 B, p. 63.
Lydekker, R. 1884 A, p. 240.
Roger, O. 1896 A, p. 42.
Scott, W. B. 1890 C.
Trouessart, E. L. 1897 A, p. 293.
Zittel, K. A. 1893 B, p. 622.

CYNODICTIS Bravard and Pomel. Type *C. parisiensis* Pomel.

Bravard and Pomel, 1850, Notice Oss. foss. Débruge, p. 5.
Filhol, H. 1876 A, p. 66.
1883 A.
Flower and Lydekker 1891 A, p. 555.
Gervais, P. 1859 A, p. 216.
Huxley, T. H. 1880 A.
Lydekker, R. 1884 A, p. 243.
1885 B, p. 107.
Nicholson and Lydekker 1889 A, p. 1437.
Pomel, A. 1853 A, p. 66.
Roger, O. 1896 A, p. 42.
Schlosser, M. 1888 B, pp. 16, 23, 40.
1890 B, p. 45.
Scott, W. B. 1888 A.
1889 A, p. 21.
1889 B, p. 211.
1890 C, p. 38. (Hesperocyon.)
1895 C, p. 72.
1898 B, p. 364.
1899 B, p. 137.
Scott and Osborn 1887 B, p. 152.
Trouessart, E. L. 1897 A, p. 293.
Wilckens, M. 1885 D, p. 497.
Wortman and Matthew 1899 A, pp. 118, 130.
Woodward, A. S. 1898 B, p. 390.
Zittel, K. A. 1893 B, p. 622.

Cynodictis gregarius (Cope).

Cope, E. D. 1873 T, p. 3. (Canis.)
Bruce, A. T. 1883 A, p. 41, fig. 7. (Galecynus.)
Cope, E. D. 1873 CC, p. 9. (Canis.)
1874 B, p. 506. (Canis.)
1879 B, p. 58. (Canis.)
1879 D, p. 63. (Canis.)
1881 C, p. 181. (Galecynus.)
1883 F, p. 217. (Galecynus.)
1883 T, p. 241. (Galecynus.)
1884 O, pp. 915, 916, pl. lxviia, figs. 7–11; pl. lxviii, figs. 5–8. (Galecynus.)
Matthew, W. D. 1899 A, p. 54.
Roger, O. 1896 A, p. 45. (Galecynus.)
Scott, W. B. 1898 B, p. 367, pl. xix, figs. 11–13; pl. xx, figs. 23–24.
Trouessart, E. L. 1897 A, p. 298. (Galecynus.)
Wortman and Matthew 1899 A, pp. 123, 130.
Oligocene (White River); Colorado, Nebraska, South Dakota: (John Day); Oregon, *fide* Cope.

Cynodictis hylactor Hay.

Hay, O. P. 1899 C, p. 254.
Cope, E. D. 1884 O, p. 916. (Syn. of Galecynus gregarius.)
Hayden, F. V. 1858 B, p. 158. (Amphicyon gracilis.)
Leidy, J. 1856 A, p. 90. (Amphicyon gracilis, not of Pomel.)
1869 A, pp. 36, 369, pl. i, fig. 7; pl. v, figs. 6–9. (Amphicyon gracilis.)
1871 C, p. 342. (Amphicyon gracilis.)
Matthew, W. D. 1899 A, p. 54. (Syn. of C. lippincottianus.)
Roger, O. 1896 A, p. 44. (Daphænos gracilis.)
Schlosser, M. 1888 B, p. 85. (Amphicyon gracilis.)
Scott and Osborn 1887 B, p. 152. (C. gracilis.)
Trouessart, E. L. 1897 A, p. 296. (Daphænos gracilis.)
Oligocene (White River); South Dakota.

Cynodictis lippincottianus (Cope).

Cope, E. D. 1873 CC, p. 9. (Canis.)
1874 B, p. 506. (Canis.)
1879 B, p. 58. (Canis.)
1879 D, p. 63. (Canis.)
1884 O, p. 919, pl. lxvii, figs. 5, 6. (Galecynus.)
Matthew, W. D. 1899 A, p. 54.
Roger, O. 1896 A, p. 45. (Galecynus.)
Scott, W. B. 1898 B, p. 400.
Wortman and Matthew 1899 A, pp. 123, 128, 130.
Oligocene (White River); Colorado, Oregon.

Cynodictis temnodon Wort. and Matth.

Wortman and Matthew 1899 A, p. 130.
Oligocene (White River); South Dakota.

NOTHOCYON[1] Matth.

Matthew, W. D. 1899 A, p. 62. (April 8.)
Wortman and Matthew 1899 A, pp. 124, 130, pl. vi. (June 21.)
Woodward, A. S. 1898 B, p. 391.
Wortman and Matthew 1899 A, pp. 127, 130.
Zittel, K. A. 1893 B, p. 626, fig. 524. (Galecynus.)
Miocene (John Day); Oregon.

Nothocyon geismarianus (Cope).

Cope, E. D. 1879 D, p. 71. (Canis.)
1879 B, p. 58. (Canis.)
1881 C, p. 181. (Galecynus.)
1883 T, p. 240, figs. 5, 6. (Galecynus.)
1884 O, pp. 915, 920, pl. lxx, figs. 2, 3; pl. lxx*a*. (Galecynus.)
1889 C, p. 233, fig. 59. (Cynodictis.)
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 45. (Galecynus.)
Scott, W. B. 1898 B, p. 365. (Canis.)
Trouessart, E. L. 1897 A, p. 299. (Galecynus.)

Nothocyon latidens (Cope).

Cope, E. D. 1881 C, p. 181. (Galecynus.)
1883 T, p. 241. (Galecynus.)
1884 O, pp. 915, 930, pl. lxx, figs. 4, 5. (Galecynus.)
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 45. (Galecynus.)
Scott, W. B. 1898 B, p. 365. (Canis.)
Trouessart, E. L. 1897 A, p. 299. (Galecynus.)
Wortman and Matthew 1899 A, pp. 127, 130.
Miocene (John Day); Oregon.

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[1] Originally the three species here included were assigned to this genus by Matthew. No type was designated, but *Canis geismarianus* may be taken. Later, Wortman and Matthew include in the genus also *Canis parvidens* Mivart.

Nothocyon lemur (Cope).

Cope, E. D. 1879 E, p. 371. (Canis.)
1881 C, p. 181. (Galecynus.)
1883 T, p. 241, fig. 7. (Galecynus.)
1884 O, pp. 915, 931, pl. lxx, figs. 6–8. (Galecynus.)
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 45. (Galecynus.)
Scott, W. B. 1898 B, p. 365. (Canis.)
Trouessart, E. L. 1897 A, p. 299. (Galecynus.)
Wortman and Matthew 1899 A, pp. 127, 130.
Miocene (John Day); Oregon.

DAPHŒNUS Leidy. Type *D. vetus* Leidy.

Leidy, J. 1853 D, p. 393.
This word is usually spelled *Daphænus*. The original form is given.
Cope, E. D. 1884 O, p. 894. (Syn. of Amphicyon.)
Eyerman, J. 1896 A, p. 279.
Flower and Lydekker 1891 A, p. 555. (Daphænus.)
Nicholson and Lydekker 1889 A, p. 1435.
Roger, O. 1896 A, p. 44. (Daphænos.)
Scott, W. B. 1889 B, p. 211.
1890 C, p. 37.
1891 A, p. 6.
1897 A, p. 1.
1898 B, p. 326.
Trouessart, E. L. 1897 A, p. 296. (Daphænos.)
Winge, H. 1895 A, pp. 46, 52, 91, 92.
Wortman and Matthew 1899 A, pp. 115, 118, 129. (Daphænus.)
Zittel, K. A. 1893 B, p. 625. (Daphænos.)

Daphœnus angustidens (Marsh).

Marsh, O. C. 1871 E, p. 124. (Amphicyon.)
King, C. 1878 A, p. 411. (Amphicyon.)
Lydekker, R. 1884 A, p. 247. (Amphicyon.)
Matthew, W. D. 1899 A, p. 54. (Syn. of Cynodictis lippincottianus.)
Roger, O. 1896 A, p. 44.
Schlosser, M, 1890 B, pp. 62, 64. (Amphicyon.)
Trouessart, E. L. 1897 A, p. 296. (Daphænos.)
Oligocene (White River); Nebraska.

Daphœnus dodgei Scott.

Scott, W. B. 1898 B, p. 362, pl. xix, figs. 6, 7. (Daphænus.)
Wortman and Matthew 1899 A, p. 129. (Daphænus.)
Oligocene (White River); Nebraska.

Daphœnus felinus Scott.

Scott, W. B. 1898 B, p. 361, pl. xx, figs. 15–17. (Daphænus.)
Wortman and Matthew 1899 A, p. 129. (Daphænus.)
Oligocene (White River); Nebraska.

Daphœnus hartshornianus (Cope).

Cope, E. D. 1873 CC, p. 9. (Canis.)
Cope, E. D. 1874 B, p. 505. (Canis.)
1881 C, p. 178. (Canis.)
1883 T, p. 237, figs. 2*a*, 3. (Amphicyon.)
1884 O, pp. 896, 906. (Amphicyon.)
Leidy, J. 1869 A, p. 32, in part; pl. i, figs. 3, 4, 6. (Amphicyon vetus=A. hartshornianus, *fide* Cope.)
Lydekker, R. 1884 A, p. 247. (Amphicyon.)
Matthew, W. D. 1899 A, pp. 52, 62. (Daphænus.)
Roger, O. 1896 A, p. 44.
Schlosser, M. 1888 B, p. 85. (Amphicyon,)
Scott, W. B. 1890 C, p. 37. (Daphænus.)
1898 B, p. 361, pl. xix, figs. 1–5; pl. xx, figs. 19–21*a*; p. 363, text fig. A, 2. (Daphænus.)
Trouessart, E. L. 1897 A, p. 926. (Daphænos.)
Wortman and Matthew 1899 A, p. 129. (Daphænus.)
Oligocene (White River); Colorado, South Dakota.

Daphœnus robustus Scott.

Scott, W. B. 1897 A, p. 2. (Daphænus.)
Oligocene (White River); Colorado.

Daphœnus vetus Leidy.

Leidy, J. 1853 D, p. 393.
Cope, E. D. 1881 C, p. 178. (Amphicyon.)
1883 T, p. 237. (Amphicyon.)
1884 O, p. 894. (Amphicyon.)
Hayden, F. V. 1858 B, p. 158. (Amphicyon.)
King, C. 1878 A, p. 411. (Amphicyon.)
Leidy, J. 1854 E, p. 157. (Amphicyon.)
1869 A, pp. 32, 369, pl. i, figs. 1–6. (Amphicyon; see D. hartshornianus.)
1871 C, p. 342. (Amphicyon.)
Lydekker, R. 1884 A, p. 248. (Amphicyon.)
Matthew, W. D. 1899 A, p. 53. (Daphænus.)
Roger, O. 1896 A, p. 44. (Daphænos.)
Schlosser, M. 1888 B, p. 85. (Amphicyon.)
Scott, W. B. 1890 C, p. 37. (Daphænus.)
1897 A, p. 1. (Daphænus.)
1898 B, pl. xix, figs. 8–10. (Daphænus.)
Trouessart, E. L. 1897 A, p. 296. (Daphænos.)
Wortman and Matthew, 1899 A, p. 129.
Oligocene (White River); South Dakota, Colorado.

PARADAPHÆNUS Matth. Type *Canis cuspigerus* Cope.

Matthew, W. D. 1899 A, p. 62. (April 8.)
Wortman and Matthew 1899 A, p. 129. (June 21.)

Paradaphænus cuspigerus (Cope).

Cope, E. D. 1879 D, p. 70. (Canis.)
1879 B, p. 58. (Canis.)
1879 E, p. 372. (Amphicyon entoptychi.)
1881 C, p. 178. (Amphicyon.)
1883 T, p. 237, fig. 1. (Amphicyon.)
1884 O, p. 898, pl. lxviii, figs. 1–4. (Amphicyon.)
Lydekker, R. 1884 A, p. 247. (Amphicyon cuspigerus, A. entoptychi.)
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 44. (Daphænos.)
Scott, W. B. 1890 C, p. 37. (Daphænus.)
Trouessart, E. L. 1897 A, p. 296. (Daphænos.)
Wortman and Matthew 1899 A, p. 129.
Miocene (John Day); Oregon.

Paradaphænus transversus Wort. and Matth.

Wortman and Matthew 1899 A, p. 129.
Miocene (John Day); Oregon.

TEMNOCYON Cope. Type *T. altigenis* Cope.

Cope, E. D. 1879 D, p. 68.
1879 F, pp. 178, 180.
1881 C, pp. 178, 179.
1883 T, p. 237.
1884 O, pp. 893, 902.
Eyerman, J, 1896 A, p. 267.
Flower and Lydekker 1891 A, p. 555.
Nicholson and Lydekker 1889 A, p. 1436.
Schlosser, M. 1888 B, pp. 18, 23, 24, 56.
Scott, W. B. 1890 C, p. 38.
1897 A, p. 3.
1898 B.
Wortman and Matthew 1899 A, pp. 115, 130.
Zittel, K. A. 1893 B, p. 626.

Temnocyon altigenis Cope.

Cope, E. D. 1879 D, p. 68.
1879 B, p. 58.
1881 C, p. 179.
1883 T, p. 238, figs. 2, 3.
1884 O, p. 903, pl. lxviii, fig. 9; pl. lxx, fig. 11.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 44.
Trouessart, E. L. 1897 A, p. 296.
Wortman and Matthew 1899 A, p. 130.
Zittel, K. A. 1893 B, p. 625, fig. 523, C, D.
Miocene (John Day); Oregon.

Temnocyon ferox Eyerman.

Eyerman, J. 1894 A.
1896 A.
Matthew, W. D. 1899 A, p. 62.
Trouessart, E. L. 1897 A, p. 297.
Wortman and Matthew 1899 A, p. 117, fig. 3, p. 130.
Miocene (John Day); Oregon.

Temnocyon wallovianus Cope.

Cope, E. D. 1881 C, p. 179.
1883 T, p. 239.
1884 O, pp. 903, 905, pl. lxx, fig. 10.
Matthew, W. D. 1899 A, p. 62.
Roger, O. 1896 A, p. 44.
Trouessart, E. L. 1897 A, p. 296.
Wortman and Matthew 1899 A, p. 130.
Zittel, K. A. 1893 B, p. 625, fig. 523 B.
Miocene (John Day); Oregon.

MESOCYON Scott. Type *Temnocyon coryphæus* Cope.

Scott, W. B. 1890 C, p. 38.
Eyerman, J. 1894 A. (Hypotemnodon, type *Temnocyon coryphæus.*)
1896 A, p. 284. (Hypotemnodon.)
Hay, O. P. 1899 C, p. 254.
Scott, W. B. 1897 A, p. 3. (Hypotemnodon.)
1898 B. (Hypotemnodon.)
Matthew, W. D. 1899 A. p. 63. (Hypotemnodon.)
Trouessart, E. L. 1897 A, p. 297. (Hypotemnodon.)
Wortman and Matthew 1899 A, pp. 118, 130. (Hypotemnodon.)

Mesocyon coryphæus (Cope).

Cope, E. D. 1879 F, p. 180. (Temnocyon.)
1879 B, p. 58. (Canis hartshornianus.)
1881 C, p. 179. (Temnocyon.)
1883 T, p. 239, fig. 4. (Temnocyon.)
1884 O, pp. 903, 906, pl. lxxi; pl. lxxi*a*, figs. 1-7; pl. lxxii*a*, figs. 4-7. (Temnocyon.)
Eyerman, J. 1894 A. (Hypotemnodon.)
Eyerman, J. 1896 A, p. 284. (Hypotemnodon.)
Hay, O. P. 1899 C, p. 253.
Matthew, W. D. 1899 A, p. 63. (Hypotemnodon.)
Scott, W. B. 1890 C, p. 39. (Mesocyon.)
Trouessart, E. L. 1897 A, p. 297. (Hypotemnodon.)
Wortman and Matthew 1899 A, p. 130. (Hypotemnodon.)
Zittel, K. A. 1893 B, p. 625, fig. 523 A.
Miocene (John Day) Oregon.

Mesocyon josephi (Cope).

Cope, E. D. 1881 C, p. 179. (Temnocyon.)
1883 T, p. 239. (Temnocyon.)
1884 O, pp. 903, 912, pl. lxx, fig. 9. (Temnocyon.)
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 44.
Trouessart, E. L. 1897 A, p. 297. (Temnocyon.)
Miocene (John Day); Oregon.

CYNODESMUS Scott. Type *C. thooides* Scott.

Scott, W. B. 1893 B, p. 660.
1895 C, p. 63.
1897 A, p. 3.
Wortman and Matthew 1899 A, p. 118.

Cynodesmus thooides Scott.

Scott, W. B. 1893 B, p. 660.
Matthew, W. D. 1899 A, p. 54.
Roger, O. 1896 A, p. 44.
Scott, W. B. 1895 C, p. 63, pl. i, figs. 1-5.
Trouessart, E. L. 1897 A, p. 297.
Oligocene (White River); Montana?.

ÆLURODON Leidy. Type *A. ferox* Leidy=*A. sævus* Leidy.

Leidy, J. 1858 E, p. 22.
Cope, E. D. 1875 N, p. 256.
1881 F, p. 387.
1883 T, p. 243.
1884 O, p. 893.
Flower and Lydekker 1891 A, p. 562.
Leidy, J. 1858 E, p. 21. (Subgenus Epicyon, type *Canis haydeni.*)
1869 A, p. 68.
1871 C, p. 344.

Nicholson and Lydekker 1889 A, p. 1433.
Schlosser, M. 1888 B, pp. 24, 61.
1890 B, p. 25. (Prohyæna, type *Canis wheelerianus* Cope.)
Scott, W. B. 1888 A.
1891 D, p. 90.
1892 A, p. 425.
1898 B, p. 402.
Scott and Osborn 1890 B, p. 66.
Trouessart, E. L. 1897 A, p. 297.
Zittel, K. A. 1893 B, p. 626.

Ælurodon compressus Cope.

Cope, E. D. 1890 J, p. 1067.
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 45.
Scott and Osborn 1890 B, p. 67, fig. 2 A. (Æ. hyænoides, not of Cope.)
Trouessart, E. L. 1897 A, p. 297.
Miocene (Loup Fork); Nebraska.

Ælurodon haydeni (Leidy).

Leidy, J. 1858 E, p. 21. [Canis (Epicyon).]
Cope, E. D. 1874 P, p. 11. (Canis.)
1875 N, p. 256. (Amphicyon.)
1883 T, p. 242. (Canis.)
Hayden, F. V. 1858 B, p. 158. [Canis (Epicyon).]
Leidy, J. 1869 A, pp. 30, 368, pl. i, fig. 10. [Canis (Epicyon).]
1871 C, p. 341. (Canis.)
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 45.
Scott and Osborn 1890 B, p. 66, fig. 2 B.
Trouessart, E. L. 1897 A, p. 297.
Miocene (Loup Fork); Nebraska.

Ælurodon hyænoides Cope.

Cope, E. D. 1881 F, p. 388.
1881 BB, p. 1023.
1883 T, p. 244, fig. 11.
1884 O, p. 945, fig. 35c.
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 45.
Schlosser, M. 1890 B, p, 25.
Trouessart, E. L. 1897 A, p. 298.
Miocene (Loup Fork); Kansas or Nebraska.

Ælurodon meandrinus Hatcher.

Hatcher, J. B. 1894 C, p. 239.
Matthew W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 45.
Trouessart, E. L. 1897 A, p. 298.
Miocene (Loup Fork); Nebraska.

Ælurodon sævus (Leidy).

Leidy, J. 1858 E, p. 21. (Canis.)
Cope, E. D. 1874 B, p. 519. (Canis.)
1874 P, p. 11. (Canis.)
1875 F, p. 68. (Canis.)
Cope, E. D. 1877 K, p. 302. (Canis lupus.)
1881 F, p. 387.
1883 T, p. 243, fig. 9.
1884 O, p. 945, text fig. 36.
1888 W, p. 1020.
1889 C, p. 234, fig, 60.
1890 J, p. 1067, pl. xxxii.
1898 B, p. 100, fig. 37.
Hayden, F. V. 1858 B, p. 158. (Ælurodon ferox. Canis sævus.)
King, C. 1878 A, p. 430. (Canis.)
Leidy, J. 1858 E, p. 21 (Canis sævus): p. 22 (Ælurodon ferox).
1869 A, pp. 28, 368, pl. i, fig. 9 (Canis sævus): pp. 68, 367, pl. i, figs. 13, 14 (Ælurodon ferox).
1870 V, p. 65. (Ælurodon ferox?.)
1871 C, p. 341 (Canis sævus); p. 344 (Ælurodon ferox).
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 45.
Schlosser, M. 1888 B, pp. 24, 61. (Canis.)
Scott and Osborn 1890 B, p. 66, figs. 1, 2.
Trouessart, E. L. 1897 A, p. 297.
Miocene (Loup Fork); Nebraska, New Mexico.

Ælurodon taxoides Hatcher.

Hatcher, J. B. 1894 C, p. 236, pl. i, fig. 2.
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 45.
Trouessart, E. L. 1897 A, p. 298.
Miocene (Loup Fork); Nebraska.

Ælurodon ursinus (Cope).

Cope, E. D. 1875 N, p. 256. (Canis.)
1875 F, p. 68. (Canis.)
1877 K, p. 304, pl. lxix, fig. 1. (Canis.)
1879 A, p. 46. (Amphicyon?.)
1881 C, p. 178. (Canis.)
1883 T, p. 242. (Canis.)
1884 O, p. 39. (Amphicyon.)
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 45.
Scott and Osborn 1890 B, p. 68.
Trouessart, E. L. 1897 A, p 298.
Miocene (Loup Fork); New Mexico, Nebraska.

Ælurodon wheelerianus Cope.

Cope, E. D. 1877 K, p. 302, pl. lxix, fig. 2. (Canis.)
1881 F, p. 388.
1883 T, p. 244, fig. 11.
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 45.
Schlosser, M. 1890 B, p. 25. (Prohyæna.)
Scott and Osborn 1890 B, p. 67.
Trouessart, E. L. 1897 A, p. 297.
Zittel, K. A. 1893 B, p. 626.
Miocene (Loup Fork): New Mexico, Nebraska.

CANIMARTES Cope. Type *C. cumminsii* Cope.

Cope E. D. 1892 Y, p. 1029.
1892 I, p. 327.
1893 A, p. 51.

Canimartes cumminsii Cope.

Cope, E. D. 1892 Y, p. 1029.
Cope, E. D. 1892 I, p. 327.
1893 A, p. 52, pl. xiv, figs. 12-14.
Matthew, W. D. 1899 A, p. 75.
Roger, O. 1896 A, p. 59.
Trouessart, E. L. 1897 A, p. 298.
Pliocene (Blanco); Texas.

TOMARCTUS Cope. Type *T. brevirostris* Cope.

Cope, E. D. 1873 T, p. 2.
1874 B, p. 519.
1879 F, pp. 179, 185.
1883 T, p. 243.
Nicholson and Lydekker 1889 A, p. 1433.

Tomarctus brevirostris Cope.

Cope, E. D. 1873 T, p. 2.
Cope, E. D. 1873 CC, p. 9.
1874 B, p. 520.
1874 P, p. 11.
1883 T, p. 243.
Matthew, W. D. 1899 A, p. 68.
Roger O. 1896 A, p. 55.
Miocene (Loup Fork); Colorado.

CANIS Linn. Type *C. familiaris* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 38.
Baird, S. F. 1857 A, p. 104.
Blainville, H. M. D. 1864 A, ii, P, plates.
Cope, E. D. 1877 K, p. 300.
1879 F, pp. 178, 184.
1881 C, p. 178.
1884 O, p. 893.
Cuvier, G. 1834 A, vii, p. 465.
Filhol, H. 1883 A.
Flower, W. H. 1869 B, p. 24.
1871 B.
1876 B, xiii, p. 487.
1883 D, p. 438.
1885 A.
Flower and Lydekker 1891 A, p. 546.
Gray, J. E. 1868 B, p. 508.
1869 A, p. 193.
Huxley, T. H. 1872 A, p. 353.
1880 A.
Leche, W. 1895 A, p. 60.
Lydekker, R. 1884 A, p. 252.
1885 B, p. 123.
Maggi, L. 1898 D.
1898 E, figs. 1–20.
Nicholson and Lydekker 1889 A, p. 1435.
Owen, R. 1868 A, p. 331, fig. 262.
Paulli, S. 1900 B, p. 489.
Pictet, F. J. 1853 A, p. 202.
Schlosser, M. 1888 B, p. 20.
Shufeldt, R. W. 1900 A, p. 395. (Vulpes.)
Steinmann, and Döderlein 1890 A, p. 720.
Trouessart, E. L. 1897 A, p. 299.
Wilckens, M. 1885 A, p. 518.
Winge, H. 1895 B, pp. 60, 91, 102, 103.
Wortman, J. L. 1886 A, p. 397.
Zittel, K. A. 1893 B, p. 627.

Canis? anceps Scott.

Scott, W. B. 1893 B, p. 660.
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 46.
Scott, W. B. 1895 C, p. 75.
Trouessart, E. L. 1897 A, p. 302.
Miocene (Loup Fork); Montana.

Canis brachypus Cope.

Cope, E. D. 1881 F, p. 389.
1883 T, p. 242, fig. 8.
1888 W.
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 48.
Miocene (Loup Fork); Wyoming.

Canis cinereoargentatus Schreber.

Allen, J. A. 1876 C, p. 333. (Vulpes virginianus.)
Baird, S. F. 1857 A, p. 139, pl. xxxv, fig. 1.
Cope, E. D. 1895 F, p. 447. (Vulpes.)
Leidy, J. 1869 A, p. 368. (C. virginianus.)
1889 H, p. 5. (C. virginianus.)
Redfield, W. C. 1850 A, p. 255. ("Vulpes"; may be not this species.)
Trouessart, E. L. 1897 A, p. 313. (Urocyon.)
Pleistocene; lead region of Illinois, New York?, Pennsylvania.

Canis dirus Allen.

Allen, J. A. 1876 A, p. 48.
Cope, E. D. 1877 K, p. 301.
Roger, O. 1896 A, p. 48.
Trouessart, E. L. 1897 A, p. 302.
Pleistocene; lead region of Upper Mississippi River.

Canis indianensis Leidy.

Leidy, J. 1869 A, p. 368.
Allen, J. A. 1876 A, p. 48 (C. indianensis, C. primævus); p. 49 (C. mississipiensis).
Cope, E. D. 1894 A, p. 453, pl. xxi, figs. 14–16.
1899 A, p. 227.
Cope and Wortman 1884 A, p. 9. (C. lupus.)
Leidy, J. 1854 I, p. 200. (C. primævus; name preoccupied.)
1856 T, p. 167, pl. xvii, figs. 11, 12. (C. primævus.)
1873 B, pp. 230, 315, pl. xxxi, fig. 2.
1873 F, p. 260.
Roger, O. 1896 A, p. 48. (C. indianensis, C. mississippiensis.)
Trouessart, E. L. 1897 A, p. 302. (C. indianensis, C. mississippiensis.)
Whitney, J. D. 1879 A, p. 246.
Yates, L. G, 1874 B, p. 18.
Pleistocene; Indiana, lead region of Upper Mississippi River; California (Leidy).

Canis latidentatus (Cope).

Cope, E. D. 1899 A, p. 228, pl. xviii, figs. 4, 4*a*. (Vulpes.)

Canis latrans Say.

Say, T., 1823, Long's Exped. R. Mts., i, p. 168.
Baird, S. F. 1857 A, p. 113, pl. lxxvi.
Cope, E. D. 1878 H, p. 389.
1883 T, p. 242.
1889 F, p. 161.
1889 S, p. 980.
Cope and Wortman 1884 A, p. 7.
Dana, J. D. 1879 A, p. 233.
Haeckel, E. 1895 A, p. 586.
Leidy, J. 1869 A, p. 369.

Trouessart, E. L. 1897 A, p. 304.
Whitney, J. D. 1879 A, p. 246.
Wyman, J. 1862 A, p. 422.
Recent; northern part of Mississippi Valley to Alberta. Pleistocene; Illinois, Indiana, Oregon.

Canis? marshii Hay.

Hay, O. P. 1899 C, p. 253.
Leidy, J. 1872 B, p. 356. (C. montanus.)
Lydekker, R. 1884 A, p. 253. (C. montanus.)
Marsh, O. C. 1871 E, p. 123. (C. montanus, not of Pearson.)
Matthew, W. D. 1899 A, pp. 40, 67. (C. montanus.)
Roger, O. 1896 A, p. 46. (C. montanus.)
Schlosser, M. 1890 B, pp. 62, 64. (C. montanus.)
Trouessart, E. L. 1897 A, p. 302. (C. montanus?.)
Eocene (Bridger); Wyoming.

The generic position of this species is uncertain, but the specific title *montanus* is not available.

Canis occidentalis Richardson.

Richardson, J., 1829, Fauna Bor.-Amer., p. 60.
Baird, S. F. 1857 A, p. 104, pl. xxxi.
Cope, E. D. 1883 T, p. 242. (C. lupus,)
Leidy, J. 1869 A, p. 368.
1889 H, p. 5. (C. lupus.)
Lydekker, R. 1884 A, p. 264. (C. lupus?.)
Trouessart, E. L. 1897 A, p. 302.
Williston, S. W. 1898 I, p. 92. (C. lupus.)
Wyman, J. 1862 A, p. 422.
Recent; North America. Pleistocene; lead region of Upper Mississippi River.

Canis priscolatrans Cope.

Cope, E. D. 1899 A, p. 227 pl. xviii, figs. 3–3*g*.
Pleistocene; Pennsylvania.

Canis temerarius Leidy.

Leidy, J. 1858 E, p. 21.
Cope, E. D. 1883 T, p. 242.
1884 O, p. 915.
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 430.
Leidy, J. 1869 A, pp. 29, 368, pl i, fig. 12.
1871 C, p. 341.
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 48.
Trouessart, E. L. 1897 A, p. 302.
Miocene (Loup Fork); Nebraska, Colorado.

Canis vafer Leidy.

Leidy, J. 1858 E, p. 21.
Cope, E. D. 1875 F, p. 68.
1877 K, pp. 301, 302.
1884 O, p. 915.
Hayden, F. V. 1858 B, p. 158.
Leidy, J. 1869 A, pp. 29, 368, pl. i, fig. 11.
1871 C, p. 341.
1873 B, p. 315.
Matthew, W. D. 1899 A, p. 67.
Roger, O. 1896 A, p. 48.
Schlosser, M. 1888 B, p. 28.
Scott and Osborn 1890 B, p. 69, fig. 3. (C. vafer?.)
Trouessart, E. L. 1897 A, p. 310. (Vulpes.)
Miocene (Loup Fork); Nebraska.

PACHYCYON Allen. Type *P. robustus* Allen.

Allen. J. A. 1885 A, p. 1.

Pachycyon robustus Allen.

Allen, J. A. 1885 A, p. 1, pls. i–iii.
Cope, E. D. 1886 G.
Trouessart, E. L. 1897 A, p. 302. (Canis.)
Pleistocene; Virginia.

HYÆNIDÆ.

Blainville, H. M. D. 1864 A, ii, Q, pls. i–viii.
Cope, E. D. 1882 D, p. 474.
1884 O, p. 892.
1888 D, p. 256.
Flower and Lydekker 1891 A, p. 540.
Gill, T. 1872 B, p. 57.
Gray, J. E. 1869 A, p. 211.
Haeckel, E. 1895 A, p. 578. (Hyænida.)
Lydekker, R. 1884 A, p. 274.
1885 B, p. 68.
Mivart, St. G. 1881 A.
1882 A.
Nicholson and Lydekker 1889 A, p. 1440.
Owen, R. 1845 B, p. 482.
Roger, O. 1896 A, p. 65.
Schlosser, M. 1888 B, pp. 4, 14.
1890 B, p. 24.
1890 C, p. 265.
Tomes, C. S. 1898 A, p. 467.
Trouessart, E. L. 1897 A, p. 317.
Turner, H. N. 1848 A.
Waterhouse, G. R. 1839 A.
Winge, H. 1895 B, pp. 47, 59.
Woodward, A. S. 1898 B, p. 397.
Zittel, K. A. 1893 B, p. 660.

BOROPHAGUS Cope. Type *B. diversidens* Cope.

Cope, E. D. 1892 Y, p. 1028.
1892 I, p. 326.
1893 A, p. 52.

Borophagus diversidens Cope.

Cope, E. D. 1892 Y, p. 1028.
Cope, E. D. 1892 I, p. 326.
1893 A, p. 54, pl. xiii, fig. 4.
Matthew, W. D. 1899 A, p. 75.
Roger, O. 1896 A, p. 66. [Hyaena (Borophagus).]
Trouessart, E. L. 1897 A, p. 320.
Pliocene (Blanco); Texas.

Superfamily ÆLUROIDEA Flower.

Flower, W. H. 1869 B, p. 22.
Cope, E. D. 1882 D, p. 473. (Epimycteri.)
  1884 O, pp. 890, 892. (Epimycteri.)
Flower, W. H. 1883 D, p. 434.
Flower and Lydekker 1891 A, p. 501.
Huxley, T. H. 1872 A, p. 358.
Mivart, St. G. 1881 A, p. 474.
  1882 A.
Schlosser, M. 1888 B, p. 6.
  1890 C, p. 265.
Tims, H. W. M. 1896 B, p. 462.

FELIDÆ.

Adams, G. I. 1896 A.
Baird, S. F. 1857 A, p. 80.
Blainville, H. M. D. 1864 A, ii, O, pls. i–xix.
Cope, E. D. 1879 F.
  1880 D, pp. 834, 851.
  1881 C.
  1882 D, p. 474.
  1884 O, pp. 263, 892.
  1888 D.
Cuvier, G. 1834 A, vii, p. 361.
Flower, W. H. 1876 B, xiii, p. 488.
  1883 D, p. 434.
Flower and Lydekker 1891 A, p. 502.
Gill, T. 1872 B, p. 57.
Gray, J. E. 1869 A, p. 5.
Haeckel, E. 1895 A, p. 587. (Felida.)
Lydekker, R. 1884 A, p. 313.
Mivart, St. G. 1881 A, p. 439.
  1882 A.
Nicholson and Lydekker 1889 A, p. 1443.
Osborn and Wortman 1892 A, p. 94.
Owen, R. 1845 B, p. 486.
Parsons, F. G. 1899 A.
  1900 A.
Roger, O. 1889 A.
  1896 A, p. 66.
Scheidt, P. 1894 A.
Schlosser, M. 1888 B, pp. 4, 14.
  1890 B, p. 34.
Scott, W. B. 1889 B, p. 235.
Slade, D. D. 1890 A.
Steinmann and Döderlein 1890 A, p. 725.
Tomes, C. S. 1898 A, p. 469.
Turner, H. N. 1848 A.
Waterhouse, G. R. 1839 A.
Weyhe, —, 1875 A, p. 116.
Williston, S. W. 1898 K.
Winge, H. 1895 B, pp. 47, 53.
Woodward, A. S. 1898 B, p. 398.
Zittel, K. A. 1893 B, pp. 663, 677.

MACHAIRODONTINÆ.

Adams, G. I. 1896 A, p. 443. (Machærodontinæ.)
Cope, E. D. 1880 D, p. 835. (Nimravidæ.)
  1881 C. (Nimravidæ.)
  1882 D, p. 474. (Nimravidæ.)
  1884 O, pp. 892, 947. (Nimravidæ.)
Gill, T. 1872 B, pp. 59, 60. (Machærodontinæ.)
Lydekker, R. 1885 E, p. 469. (Nimravidæ.)
Mivart, St. G. 1881 A, p. 439. (Nimravidæ.)
Nicholson and Lydekker 1889 A, p. 1443. (Nimravidæ.)
Osborn and Wortman 1892 A. (Nimravidæ.)
Roger, O. 1896 A, p. 67. (Machairodinæ.)
Schlosser, M. 1890 B, p. 38. (Nimravidæ.)
Scott, W. B. 1888 A. (Nimravidæ.)
  1889 B, p. 238. (Nimravidæ.)
  1892 A, p. 425. (Nimravidæ.)
  1898 B, p. 404.
Scott and Osborn 1887 B, p. 153. (Nimravidæ.)
Steinmann and Döderlein 1890 A, p. 726. (Nimravinæ.)
Trouessart, E. L. 1897 A, p. 343. (Machærodinæ.)
Winge, H. 1895 B, pp. 47, 55, 56.
Woodward, A. S. 1898 B, p. 399. (Nimravidæ, or Machærodontidæ.)
Zittel, K. A. 1893 B, p. 667.

MACHAIRODUS Kaup. Type *M. neogæus* Lund.

Kaup, J., 1833 Oss. foss. Mus. Darmstadt.
  The name of this genus is commonly spelled *Machærodus*.
Adams, G. I. 1896 A, p. 432.
  1897 A, p. 147.
Brown, H. G. 1838 A, p. 1277, pl. xlv, fig. 4.
Burmeister, H. 1866 B, p. 123.
  1879 B, p. 106.
Cope, E. D. 1879 F, p. 171.
Dawkins and Sanford 1872 A, p. 184.
Filhol H. 1891 A, p. 47.
Gervais, P. 1859 A, p. 230.
Hartmann, R. 1893 A.
Kittl, E. 1887 A, p. 321.
Leidy, J. 1854 A, pp. 95, 115.
Lydekker, R. 1884 A, p. 332.
  1885 B, p. 41.
March, O. C. 1877 E.
Nicholson and Lydekker 1889 A, p. 1449.
Owen, R. 1845 B, p. 490.
  1846 B, p. 174.
  1847 C, p. 67.
  1868 A, p. 339.
Pictet, F. J. 1853 A, p. 230.
Quenstedt, F. A. 1885 A, p. 42.
Steinmann and Döderlein 1890 A, p. 727.
Trouessart, E. L. 1897 A, p. 347.
Winge, H. 1895 B, pp. 47, 56, 91.
Zittel, K. A. 1893 B, p. 673.

Machairodus gracilis Cope.

Cope, E. D. 1880 D, p. 857. (Smilodon.)
1895 F, p. 448. (Smilodon.)
1899 A, p. 240, pl. xx, fig. 1.
Cope and Wortman 1884 A, p. 5. (Smilodon.)
Cragin, F. W. 1892 B, p. 17. (Machærodus.)
Lydekker, R. 1884 A, p. 333. (Machærodus.)
Roger, O. 1896 A, p. 70. (Machairodus.)
Trouessart, E. L. 1897 A, p. 849.
Pleistocene; Pennsylvania.

Machairodus mercerii Cope.

Cope, E. D. 1895 F, p. 448. (Uncia.)
1896 F, p. 392. (Uncia mercerii, in part.)
1899 A, p. 240 (Machærodus); p. 245, pl. xx, figs. 2-2c (Smilodon).
Roger, O. 1896 A, p. 72. (Felis.)
Trouessart, E. L. 1897 A, p. 351. (Felis.)
Pleistocene; Pennsylvania.

ÆLUROTHERIUM Adams. Type *Patriofelis leidyana* Osb. and Wort.

Adams, G. I. 1896 A, p. 442.

Ælurotherium leidyanum (Osb. and Wort.).

Osborn and Wortman 1892 A, p. 98, fig. 5. (Patriofelis.)
Adams, G. I. 1896 A, p. 442.
Matthew, W. D. 1899 A, p. 41.
Roger, O. 1896 A, p. 37. (Patriofelis.)
Scott, W. B. 1892 B, p. 313. (Genus doubtful.)
Trouessart, E. L. 1897 A, p. 231 (Patriofelis); p. 344 (Ælurotherium).
Wortman, J. L. 1894 A, p. 164. (Not Patriofelis.)
Eocene (Bridger); Wyoming.

EUSMILUS Gerv. Type *E. bidentatus* (*Filhol*).

Gervais, 1875, Jour. Zool., iv, p. 419.
Cope, E. D. 1884 O, p. 948.
Flower, W. H. 1883 D, p. 435.
Flower and Lydekker 1891 A, p. 524.
Hatcher, J. B. 1895 A.
Lydekker, R. 1884 A, p. 332.
Mivart, St. G. 1881 A, p. 437.
Schlosser, M. 1890 B, p. 48.
Trouessart, E. L. 1897 A, p. 346.
Zittel, K. A. 1893 B, p. 672.

Eusmilus dakotensis Hatcher.

Hatcher, J. B. 1895 B.
Adams, G. I. 1896 B, p. 48, pl. ii, fig. 3.
Matthew, W. D. 1899 A, p. 55.
Trouessart, E. L. 1897 A, p. 346.
Oligocene (White River); South Dakota.

HOPLOPHONEUS Cope. Type *Machærodus oreodontis* Cope.

Cope, E. D. 1874 B, p. 509.
Adams, G. I. 1896 A.
1896 B.
Cope, E. D. 1879 F, pp. 170, 171.
1880 D, pp. 836, 849.
1881 C, p. 167.
1884 O, pp. 948, 992.
Flower and Lydekker 1891 A, p. 524.
Leidy, J. 1869 A, p. 53. (Drepanodon.)
1871 C, p. 343. (Drepanodon.)
Mivart, St. G. 1881 A, pp. 433, 439.
Nicholson and Lydekker 1889 A, p. 1446.
Osborn and Wortman 1894 A, p. 227.
Schlosser, M. 1890 B, p. 48.
Scott, W. B. 1889 B.
1898 B, p. 411.
Scott and Osborn 1887 B, p. 153, text fig. 2.
Steinmann and Döderlein 1890 A, p. 727.
Williston, S. W. 1895 A, p. 170. (Dinotomius, type *D. atrox* Willist.
Winge, H. 1895 B, pp. 47, 55, 91.
Wortman, J. L. 1893 A.
Zittel, K. A. 1893 B, p. 672.

Hoplophoneus catocopis (Cope).

Cope, E. D. 1887 P, p. 1019. (Machærodus.)
Adams, G. I. 1896 A, p. 433.
Cope, E. D. 1892 AA. (Machærodus.)
Matthew, W. D. 1899 A, p. 68. (Machærodus.)
Roger, O. 1896 A, p. 70. (Machairodus.)
Trouessart, E. L. 1897 A, p. 346.
Miocene (Loup Fork); Kansas.

Hoplophoneus cerebralis Cope.

Cope, E. D. 1880 F, p. 143. (Machærodus.)
Adams, G. I. 1896 A, p. 429, pl. xi, fig. 1.
1896 B, p. 50, pl. i, fig. 1.
Cope, E. D. 1880 D, p. 850.
1884 O, pp. 976, 997, pl. lxxva, figs. 3-5.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 68.
Trouessart, E. L. 1897 A, p. 345.
Miocene (John Day); Oregon.

Hoplophoneus crassidens (Cragin).

Cragin, F. W. 1892 B, p. 17. (Machærodus.)
Adams, G. I. 1896 A, p. 433.
Matthew, W. D. 1899 A, p. 55.
Trouessart, E. L. 1897 A. p. 346.
Williston, S. W. 1895 A, p. 174, pl. xix. (Machærodus.)
Miocene? (Loup Fork?); Kansas.

Hoplophoneus insolens Adams.

Adams, G. I. 1896 A, p. 429, pl. xi, fig. 5.
1896 B, p. 48, pl. 1, fig. 5.
Matthew, W. D. 1899 A, p. 55.
Osborn and Wortman 1894 A, p. 227. (H. occidentalis, not of Leidy.)
Trouessart, E. L. 1897 A, p. 346.
Oligocene (White River); South Dakota.

Hoplophoneus occidentalis (Leidy).

Leidy, J. 1869 A, pp. 63, 367, pl. v, fig. 5. (Drepanodon.)

Adams, G. I. 1896 A, p. 428, pl. xi, fig. 6.
1896 B, p. 47, pl. i, fig. 6; pl. ii, figs. 1, 2.
Cope, E. D. 1884 O, p. 998.
Leidy, J. 1866 A, p. 345. (Drepanodon occidentalis; no description.)
1871 C, p. 343. (Drepanodon.)
Matthew, W. D. 1899 A, p. 54.
Riggs, E. S. 1896 A, pl. 1.
Roger, O. 1896 A, p. 68.
Scott and Osborn 1887 B, p. 154.
Trouessart, E. L. 1897 A, p. 346.
Williston, S. W. 1895 A, p. 170, pl. xviii. (Dinotomius atrox.)
1898 K, p. 349, figure.
Oligocene (White River); South Dakota.

Hoplophoneus oreodontis Cope.

Cope, E. D. 1873 CC, p. 9. (Machærodus.)
Adams, G. I, 1896 A, p. 429, pl. xi, fig. 2.
1896 B, p. 50, pl. i, fig. 2.
Bruce, A. T. 1883 A, p. 42, fig. 8.
Cope, E. D. 1874 B, p. 509.
1874 P, p. 23.
1880 D, p. 850.
1884 O, pp. 976, 993, pl. lxvii*a*, fig. 17; pl. lxxv*a*, figs. 1, 2.
Matthew, W. D. 1899 A, p. 55,
Mivart, St. G. 1881 A, p. 434, fig. 185.
Roger, O. 1896 A, p. 68.
Trouessart, E, L. 1897 A, p. 345.
Oligocene (White River); Colorado.

Hoplophoneus primævus (Leidy).

Leidy, J. 1851 H, p. 329. (Machairodus.)
Adams, G. I. 1896 A, p. 419, pl. x; pl. xi, fig. 3.
1896 B, p, 49, pl. i, fig. 4.
Cope, E, D. 1880 D, p. 850.
1884 O, p. 993.
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 411. (Drepanodon.)
Leidy, J. 1852 J, p. 564, pl. xii A, fig. 5. (Machairodus.)
1853 D, p. 392. (Machairodus.)
1854 A, pp. 94, 115, pl. xviii. (Machairodus.)
1854 E, p. 156. (Machairodus.)
1857 D, p. 176. (Drepanodon.)
1869 A, pp. 54, 367, pl. i, fig. 8. (Drepanodon.)
1871 C, p. 343. (Drepanodon.)
Matthew, W. D. 1899 A, p. 75.
Osborn, H. F. 1898 Q, p. 11.
Roger, O. 1896 A, p. 68.
Scott and Osborn, 1887 B, p. 153, pl. i.
Trouessart, E. L. 1897 A, p. 345.
Oligocene (White River); South Dakota.

Hoplophoneus robustus Adams.

Adams, G. I. 1896 B, p. 49, pl. i, fig. 4.
1896 A, p. 428, pl. xi, fig. 4.
Leidy, J. 1869 A, p. 54 (in part); pl. iv, fig. 1.
Matthew, W. D. 1899 A, p. 55.
Osborn and Wortman 1894 A, p. 227. (H. primævus, not of Leidy.)
Trouessart, E. L. 1897 A, p. 346.
Oligocene (White River); South Dakota, Nebraska.

Hoplophoneus strigidens Cope.

Cope, E. D. 1879 D, p. 71. (Machærodus.)
Adams, G. I. 1896 A, p. 429.
Cope, E. D. 1879 B, p. 56. (Machærodus.)
1879 X, p. 798*a*. (Machærodus.)
1880 D, p. 851.
1884 O, p. 1001, pl. lxxv*a*, fig. 6.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 68.
Trouessart, E. L. 1897 A, p. 346.
Miocene (John Day); Oregon.
The generic position of this species is doubtful.

DEINICTIS Leidy. Type *D. felina* Leidy.

Leidy, J. 1856 H, p. 91.
Most authors have adopted the spelling *Dinictis*. The original name is *Deinictis*.
Adams, G. I. 1896 A.
Allen, H. 1888 A.
Cope, E. D. 1873 T, p. 2. (Daptophilus, type *D. squalidens* Cope.)
1874 B, p. 508. (Daptophilus.)
1879 F, pp. 169, 170.
1880 D, pp. 886, 845 (Dinictis); pp. 836, 847 (Pogonodon).
1880 F, p. 143 (Dinictis; Pogonodon, type *P. platycopis*).
1881 C, p. 167. (Dinictis, Pogonodon.)
1884 O, pp. 948, 973 (Dinictis); pp. 948, 981 (Pogonodon).
Flower and Lydekker 1891 A, p. 523 (Dinictis); p. 524 (Pogonodon).
Gaudry, A. 1878 B, p. 220. (Dinictis).
Leidy, J. 1854 D, p. 127. (Dinictis; no description.)
1869 A, p. 64. (Dinictis.)
1871 C, p. 343. (Dinictis.)
Mivart, St. G. 1881 A, pp. 435, 439 (Dinictis); pp. 437, 439 (Pogonodon).
Nicholson and Lydekker 1889 A, p. 1444 (Dinictis); p. 1446 (Pogonodon).
Schlosser, M. 1890 B, p. 42.
Scott, W. B. 1892 A, p. 425.
Steinmann and Döderlein, 1890 A, p. 726 (Dinictis); p. 727 (Pogonodon).
Trouessart, E. L. 1897 A, p. 344.
Williston, S. W. 1895 A, p. 173, figure.
Winge, H. 1895 B, pp. 47, 55, 91.
Zittel, K. A. 1893 B, p. 669 (Dinictis); p. 671 (Pogonodon).

Deinictis bombifrons Adams.

Adams, G. I. 1895 A, p. 577, pl. xxvi. (Dinictis.)
Matthew, W. D. 1899 A, p. 54. (Dinictis.)
Roger, O. 1896 A, p. 68. (Dinictis.)
Trouessart, E. L. 1897 A, p. 345. (Dinictis.)
Oligocene (White River); South Dakota?.

Deinictis brachyops (Cope).

Cope, E. D. 1879 D, p. 72, in part. (Machærodus.)
Adams, G. I. 1896 A, p. 431, pl. xii, fig. 5. (Dinictis.)
Cope, E. D. 1879 B, p. 56. (Hoplophoneus.)
1879 K, p. 197. (Hoplophoneus.)
1880 D, pp. 843, 849, fig. 11. (Pogonodon.)
1884 O, pp. 972, 987, pl. lxxiv, figs. 3-10. (Pogonodon.)
Matthew, W. D. 1899 A, p. 63. (Pogonodon.)
Roger, O. 1896 A, p. 68. (Pogonodon.)
Trouessart, E. L. 1897 A, p. 345. (Dinictis.)
Miocene (John Day); Oregon.

Deinictis cyclops Cope.

Cope, E. D. 1879 F, p. 176. (Dinictis.)
Adams, G. I. 1896 A, p. 430, pl. xii, fig. 2. (Dinictis.)
Cope, E. D. 1880 D, p. 846, fig. 8. (Dinictis.)
1884 O, p. 974, pl. lxxv, fig. 1. (Dinictis.)
Matthew, W. D. 1899 A, p. 63.
Mivart, St. G. 1881 A, p. 435. (Dinictis.)
Roger, O. 1896 A, p. 67.
Trouessart, E. L. 1897 A, p. 344. (Dinictis.)
Zittel, K. A. 1893 B, p. 670, fig. 560. (Dinictis.)
Oligocene (John Day); Oregon.

Deinictis felina Leidy.

Leidy, J. 1856 H, p. 91.
Adams, G. I. 1896 A, p. 430, pl. xii, fig. 3. (Dinictis.)
Cope, E. D. 1879 F, p. 176. (Dinictis.)
1880 D, p. 846. (Dinictis.)
1884 O, pp. 974, 978. (Dinictis.)
Gaudry, A. 1878 B, p. 220, fig. 292.
Hayden, F. V. 1858 B, p. 158.
King, C. 1878 A, p. 411. (Dinictis.)
Leidy, J. 1854 D, p. 127. (Dinictis; no description.)
1869 A, pp. 64, 368, pl. v, figs. 1-4. (Dinictis.)
1871 C, p. 343. (Dinictis.)
Matthew, W. D. 1899 A, p. 54. (Dinictis.)
Roger, O. 1896 A, p. 67. (Dinictis.)
Schlosser, M. 1890 B, p. 41.
Scott, W. B. 1889 A. (Dinictis.)
Scott and Osborn 1887 B, p. 153. (Dinictis.)
Trouessart, E. L. 1897 A, p. 344. (Dinictis.)
Zittel, K. A. 1893 B, p. 669, fig. 559. (Dinictis.)
Oligocene (White River); South Dakota, Colorado.

Deinictis fortis Adams.

Adams, G. I. 1895 A, p. 574, text fig. 1. (Dinictis.)
1896 A, pp. 430, 436, pl. xii, fig. 4. (Dinictis.)
Matthew, W. D. 1899 A, p. 54. (Dinictis.)
Roger, O. 1896 A, p. 68. (Dinictis.)
Trouessart, E. L. 1897 A, p. 345. (Dinictis.)
Oligocene (White River); Colorado.

Deinictis major Lucas.

Lucas, F. A. 1898 A, p. 399. (Dinictis.)
Oligocene (White River); Nebraska.

Deinictis paucidens Riggs.

Riggs, E. S. 1896 B, p. 237. (Dinictis.)
Adams, G. I. 1896 A, p. 436, footnote. (Syn. of D. fortis.)
Matthew, W. D. 1899 A, p. 54. (Dinictis.)
Oligocene (White River).

Deinictis platycopis (Cope).

Cope, E. D. 1879 X, p. 798*b*. (Hoplophoneus.)
Adams, G. I. 1896 A, p. 431, pl. xii, fig. 6. (Dinictis.)
Cope, E. D. 1879 E, p. 373. (Hoplophoneus.)
1880 D, p. 847, fig. 9. (Pogonodon.)
1880 F, p. 143. (Pogonodon.)
1884 O, p. 982, text fig. 38, pl. lxxiv*a*. (Pogonodon.)
Matthew, W. D. 1899 A, p. 63. (Pogonodon.)
Mivart, St. G. 1881 A, p. 189. (Pogonodon.)
Roger, O. 1896 A, p. 68. (Pogonodon.)
Trouessart, E. L. 1897 A, p. 345. (Dinictis.)
Zittel, K. A. 1893 B, p. 671, fig. 562. (Pogonodon platycopsis.)
Miocene (John Day); Oregon.

Deinictis squalidens Cope.

Cope, E. D. 1873 T, p. 2. (Daptophilus.)
Adams, G. I. 1896 A, p. 430, pl. xii, fig. 1. (Dinictis.)
Cope, E. D. 1873 CC, p. 9. (Daptophilus.)
1874 B, p. 508. (Daptophilus.)
1879 F, p. 176. (Dinictis.)
1880 D, p. 847, (Dinictis.)
1884 O, pp. 974, 979, pl. lxvii*a*, figs. 15, 16. (Dinictis.)
Matthew, W. D. 1899 A, p. 54. (Dinictis.)
Roger, O. 1896 A, p. 68. (Dinictis.)
Trouessart, E. L. 1897 A, p. 344. (Dinictis.)
Oligocene (White River); Colorado.

Smilodon Lund. Type *S. populator* Lund.

Lund, P. W. 1842 A, p. 193.
Adams, G. I. 1896 A, p. 433.
1897 A, p. 147.
Ameghino, F. 1889 A, p. 333.
Blainville, H. M. D. 1864 A, iv, EE, p. 7, pl. xx.
Cope, E. D. 1880 D, p. 854.
1881 C, p. 166.
1896 A, p. 240.
Filhol, H. 1888 B, p. 129. (On Machairodus bidentatus.)
Gervais P. 1878 A.
Gervais and Ameghino 1880 A, p. 11.
Leidy, J. 1868 A, p. 175. (Trucifelis, as subgenus, with *Felis fatalis* as type.)
1869 A, p. 366. (Trucifelis.)
Lydekker, R. 1885 B, p. 41. (Syn. of Machærodus.)
Nicholson and Lydekker 1889 A, p. 1449.
Owen, R. 1847 C, p. 67.
Zittel, K. A. 1893 B, p. 675. (Syn. of Machairodus.)

Smilodon fatalis (Leidy).

Leidy, J. 1868 A, p. 175. [Felis (Trucifelis).]
Adams, G. I. 1896 A, p. 433.
Cope, E. D, 1880 D, p. 857.
1899 A, p. 240.
Cope and Wortman 1884 A, p. 5.
Leidy, J. 1869 A, p. 366, pl. xxvii, figs. 10, 11. (Trucifelis.)
1873 B, p. 260. (Trucifelis.)
Lydekker, R. 1884 A, p. 333. (Machærodus.)

Roger, O. 1896 A, p. 70. (Machairodus.)
Trouessart, E. L. 1897 A, p. 349.
Pleistocene; Texas.

Smilodon floridanus (Leidy).

Leidy, J. 1889 A, p. 29. (Drepanodon or Machairodus.)
Adams, G. I. 1896 A, p. 433.
Cope, E. D. 1892 AA. (Machærodus.)
Leidy, J. 1889 D, p. 14, pl. iii, fig. 1. (Machairodus.)
1892 A. (Machairodus.)
Roger, O. 1896 A, p. 70. (Machairodus.)
Trouessart, E. L. 1897 A, p. 349.
Zittel, K. A. 1893 B, p. 675. (Machairodus.)
Pleistocene; Florida.

DINOBASTIS Cope. Type *D. serus* Cope.

Cope, E. D. 1893 K, p. 896.
Adams, G. I. 1896 A, pp. 433, 435.
1897 A, p. 145. (Syn. of Smilodon.)
Cope, E. D. 1894 H, p. 454.

Dinobastis serus Cope.

Cope, E. D, 1893 K, p. 896.
Cope, E. D. 1894 A, p. 68.
1894 H, p. 454, pl. xxi, figs. 1–13.
Roger, O. 1896 A, p. 70.
Trouessart, E. L. 1897 A, p. 349.
Pleistocene; Kansas, Oklahoma.

ARCHÆLURUS Cope. Type *A. debilis* Cope.

Cope, E. D. 1879 X, p. 798*a*.
Adams, G. I. 1896 A, p. 438.
Allen, H. 1888 A.
Cope, E. D. 1879 E, p. 372.
1880 D, p. 836, 841.
1881 C, p. 167.
1884 O, pp. 948, 952.
Flower and Lydekker 1891 A, p. 524.
Mivart, St. G. 1881 A, pp. 436, 439.
Nicholson and Lydekker 1889 A, p. 1446.
Schlosser, M. 1890 B, p. 40.
Winge, H. 1895 B, pp. 47, 55, 91.
Zittel, K. A. 1893 B, p. 672.

Archælurus debilis Cope.

Cope, E. D. 1879 X, p. 798*a*.
Cope, E. D. 1879 D, p. 72. (Part of Machærodus brachyops, "female skull.")
1879 E, p. 372.
1880 D, p. 842, figs. 3, 4, 7.
1881 J, p. 546, fig. 7.
1884 O, p. 953, pl. lxxi*a*, figs. 8–16.
1889 C, p. 190.
Matthew, W. D. 1899 A, p. 63.
Mivart, St. G. 1881 A, p. 436, fig. 188.
Roger, O. 1896 A, p. 68.
Trouessart, E. L. 1897 A, p. 343. (Exclusive of Pseudælurus intrepidus.)
Miocene (John Day); Oregon.

NIMRAVUS Cope. Type *N. gomphodus* Cope.

Cope, E. D. 1879 F, pp. 169, 170.
Adams, G. I. 1896 A, p. 438.
1897 A, p. 146.
Cope, E. D. 1880 D, pp. 836, 843.
1881 C, p. 167.
1884 O, pp. 948, 963.
Flower and Lydekker 1891 A, p. 524.
Lydekker, R. 1887 A, p. 313.
Mivart, St. G. 1881 A, pp. 435, 439.
Nicholson and Lydekker 1889 A, p. 1446.
Winge, H. 1895 B, pp. 47, 55, 91.
Zittel, K. A. 1893 B, p. 671.

Nimravus confertus Cope.

Cope, E. D. 1880 D, p. 844, fig. 10.
Adams, G. I. 1897 A, p. 149, fig. 5.
Cope, E. D. 1881 C, p. 172.
1884 O, p. 972, pl. lxxi*a*, fig. 17.
Matthew, W. D. 1899 A, p. 63.
Roger, O. 1896 A, p. 68.
Trouessart, E. L. 1897 A, p. 344.
Miocene (John Day); Oregon.

Nimravus gomphodus Cope.

Cope, E. D. 1880 D, p. 844, figs. 6, 7.
Adams, G. I. 1897 A, p. 149, fig. 4.
Cope, E. D. 1879 F, p. 170. (N. brachyops; not Deinictis brachyops.)
1881 C, p. 171.
1881 J, p. 546, fig. 8.
1884 O, p. 964, pl. lxxii*a*, figs. 1–3; pl. lxxiii.
Matthew, W. D. 1899 A, p. 63.
Mivart, St. G. 1881 A, p. 434, fig. 186. (N. brachyops.)
Roger, O. 1896 A, p. 68.
Trouessart, E. L. 1897 A, p. 344.
Zittel, K. A. 1893 B, p. 673, fig. 563.
Miocene (John Day); Oregon.

FELINÆ.

Adams, G. I. 1896 A, p. 444.
Gill, T. 1872 B, p. 59.
Roger, O, 1896 A, p. 66 (Proælurinæ.); p. 67 (Machairodinæ, in part.)
Trouessart, E. L. 1897 A, p. 350.
Zittel, K. A. 1893 B, p. 676.

PSEUDÆLURUS Gervais. Type *Felis quadridentata* Blainv.

Gervais, P., 1848–1852, Zool. et Paléont. franç., 1st edition, p. 127.
Adams, G. I. 1897 A, p. 145.
Cope, E. D. 1879 F, p. 170.
  1881 C, p. 167.
  1884 O, p. 948.
Depéret, C. 1892 A, p. 20.
Filhol, H. 1872 A, p. 3.
  1876 A, p. 158.
  1891 A, p. 73.
Gervais, P. 1859 A, p. 232.
Leidy, J. 1869 A, p. 52.
  1871 C, p. 343.
Lydekker, R. 1884 A, p. 314.
  1885 B, p. 64.
Mivart, St. G. 1881 A, p. 434.
Schlosser, M. 1890 B, p. 39.
Trouessart, E. L. 1897 A, p. 350.
Winge, H. 1895 B, pp. 47, 54, 78, 91.
Zittel, K. A. 1893 B, p. 666.

Pseudælurus intrepidus Leidy.

Leidy, J. 1858 E, p. 22. [Felis (Pseudælurus).]
Cope, E. D. 1879 X, p. 796*a*.
Hayden, F. V. 1858 B, p. 158. [Felis (Pseudælurus).]
King, C. 1878 A, p. 411. (Drepanodon.)
Leidy, J. 1869 A, pp. 52, 367, pl. i, fig. 8.
  1871 C, p. 343.
Matthew, W. D. 1899 A, p. 68.
Roger, O. 1896 A, p. 67.
Schlosser, M. 1890 B, p. 40.
Scott and Osborn 1890 B, p. 71.
Trouessart, E. L. 1897 A, p. 343. (Syn. of Archælurus debilis.)
  Miocene (Loup Fork); Nebraska, Colorado.

FELIS[1] Linn. Type *F. catus* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 41.
Baird, S. F. 1857 A, p. 81.
Blainville, H. M. D. 1864 A, ii, O, p. 1, pl. xix.
Cope, E. D. 1879 F, pp. 170, 171.
  1899 A, p. 247. (Felis, Uncia.)
Flower, W. H. 1869 B, p. 15.
  1883 D, p. 434.
  1885 A.
Flower and Lydekker 1891 A, p. 502.
Leche, W. 1895 A, p. 56.
Mivart, St. G. 1881 A.
  1882 A.
Nicholson and Lydekker 1889 A, p. 1447.
Owen, R. 1866 B
  1868 A.
Pictet, F. J. 1853 A, p. 225.
Trouessart, E. L. 1897 A, p. 351.
Williston, S. W. 1898 K.
Winge, H. 1895 B, pp. 54, 91, 100, 101.
Zittel, K. A. 1893 B, p. 676.

Felis atrox Leidy.

Leidy, J. 1853 F, p. 34.
Cope, E. D. 1880 D, p. 858. (Uncia.)
  1899 A, p. 249. (Uncia.)
Cope and Wortman 1884 A, p. 5.
Leidy, J. 1860 B, p. 103.
  1869 A, p. 365.
Roger, O. 1896 A, p. 72.
Trouessart, E. L. 1897 A, p. 351.
Wailes, B. L. C. 1854 A, p. 286.

Felis augustus Leidy.

Leidy, J. 1872 E, p. 39.
Cope, E. D. 1880 D, p. 858. (Uncia.)
Leidy, J. 1873 B, pp. 227, 315, pl. vii, figs. 18, 19; pl. xx, fig. 24.
Matthew, W. D. 1899 A, p. 68. (Felis?.)
Roger, O. 1896 A, p. 73. (F. angusta.)
Trouessart, E. L. 1897 A, p. 351.
Zittel, K. A. 1893 B, p. 677. (F. angustus.)
  Miocene (Loup Fork); Nebraska.

Felis calcaratus Cope.

Cope, E. D. 1899 A, p. 250, pl. xxi, figs. 2, 2*a*.
  1895 F, p. 448. (F. rufus, not of authors.)
  Pleistocene; Pennsylvania.

Felis concolor Linn.

Linnæus, C., 1771, Mantissa, p. 522.
Baird, S. F. 1857 A, p. 83, pl. lxxi.
Giebel, C. G. 1872 A, p, 431.
Leidy, J. 1888 A, p. 9.
Trouessart, E. L. 1897 A, p. 352.
True, F. W. 1891 A, p. 591.
  Recent; Mexico to Canada. Pleistocene; Illinois.

Felis eyra Desm.

Baird, S. F. 1857 A, p. 88, pl. lxii, fig. 1.
Cope, E. D. 1895 F, p. 449.
  1899 A, p. 250.
Giebel, C. G, 1872 A, p. 431.
  Recent; Guiana to Mexico. Pleistocene; Pennsylvania.

Felis hillianus Cope.

Cope, E. D. 1892 Y, p. 1029.
  1892 I, p. 327.
  1893 A, p. 55, pl. xiv, figs. 1–11.
Matthew, W. D. 1899 A, p. 75.
Roger, O. 1896 A, p. 72.
Trouessart, E. L. 1897 A, p. 351.
  Pliocene (Blanco); Texas.

Felis imperialis Leidy.

Leidy, J. 1873 F, p. 259.
Adams, G. I. 1896 A, p. 434.
Leidy, J. 1873 B, pp. 228, 315, pl. xxxi, fig. 3.
Roger, O. 1896 A, p. 73.
Trouessart, E. L. 1897 A, p. 351.
Whitney, J. D. 1879 A, p. 246.
Yates, L. G. 1874 B, p. 18.
  Pleistocene; California.

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[1] Besides the species below recorded, Dr. Leidy (1889 H, p. 5) has reported *F. canadensis* from a cave in Pennsylvania.

Felis inexpectatus (Cope).

Cope, E. D. 1895 F, p. 449. (Crocuta.)
1896 F, p. 392. (Uncia mercerii, in part.)
1899 A, p. 247, pl. xxi, figs. 1-1*f*. (Uncia.)
Lydekker, R., 1896, Zool. Record for 1895, Mamm., p. 28. (Nimravus?.)
Roger, O. 1896 A, p. 66 (Hyaena crocuta inexpectata).
Trouessart, E. L. 1897 A, p. 351. (Syn. of Felis mercerii.)
Pleistocene; Pennsylvania.

Felis? maximus Scott and Osb.

Scott and Osborn 1890 B, p. 70, figs. 4, 5.
Adams, G. I. 1896 A, p. 434. (Genus uncertain.)
Cragin, F. W. 1892 B, p. 17.
Matthew, W. D. 1899 A, p. 68. (Felis?.)
Roger, O. 1896 A, p. 72.
Trouessart, E. L. 1897 A, p. 351.
Williston, S. W. 1898 K, p. 349.
Miocene (Loup Fork); Kansas.

Felis ruffus Güldenst.

Allen, J. A. 1876 C, p. 333. (Lynx rufus.)
Baird, S. F. 1857 A, p. 90. (Lynx rufus.)
Trouessart, E. L. 1897 A, p. 368. (F. rufa.)
Recent; United States to Mexico. Pleistocene?; caves of Pennsylvania, *fide* Allen.

Suborder PINNIPEDIA.

Allen, J. A. 1880 A.
Cope, E. D. 1888 CC, p. 310.
1889 R, p. 876.
1898 B, pp. 118, 120.
Flower, W. H. 1883 D, p. 442.
1885 A.
Flower and Lydekker 1891 A, p. 592.
Gadow, H. 1898 A, p. 50.
Gill, T. 1866 A.
1872 A.
1872 B, pp. 56, 68.
Gray, J. E. 1866 A.
Gruber, W. 1859 A.
Hæckel, E. 1895 A, p. 588.
Huxley, T. H. 1872 A, p. 359.
Kükenthal, W. 1890 C.
Leboucq, H. 1888 A, p. 359.
Lydekker, R. 1896 B.
Mivart, St. G. 1885 A.
Murie, J. 1874 A.
Nicholson and Lydekker 1889 A, p. 1422.
Osborn, H. F. 1893 D.
Paulli, S. 1900 B, p. 505.
Reh, L. 1894 A.
Roger, O. 1896 A, p. 73.
Schlosser, M. 1889 A.
1890 C, p. 266.
1890 D.
Smith, J. 1895 A, p. 342.
Steinmann and Döderlein 1890 A, p. 728.
Thompson, D'A. W. 1890 A.
Tomes, C. S. 1898 A, p. 475.
Tornier, G. 1890 A, p. 449.
Trouessart, E. L. 1897 A, p. 369.
Van Beneden, P. J. 1877 A.
Weber, M. 1886 A, p. 227.
Wortman, J. L. 1894 A, pp. 157, 162.
Zittel, K. A. 1893 B, p. 680.

OTARIIDÆ.

Brookes, 1828, Cat. Anat. Zool. Mus., p. 36. (Otariadæ, *fide* Allen.)
Allen, J. A. 1880 A, p. 187.
Flower and Lydekker 1898 A, p. 593.
Gill, T. 1866 A, p. 7.
Gill, T. 1872 B, pp. 68, 69.
Trouessart, E. L. 1897 A, p. 369.
Winge, H. 1895 B, pp. 47, 70.
Zittel, K. A. 1893 B, p. 683. (Otaridæ.)

EUMETOPIAS Gill. Type *Arctocephalus monteriensis* Gray = *Otaria stelleri* Lesson.

Gill, T. 1866 A, pp. 7, 11.
Allen, J. A. 1880 A, p. 231.
Flower and Lydekker 1891 A, p. 593. (Otaria, in part.)
Trouessart, E. L. 1897 A, p. 370.

Eumetopias stelleri (Lesson).

Allen, J. A. 1880 A, p. 232, fig. 37. (Synonymy and literature.)
Bowers, S. 1889 A.
Gray, J. E. 1866 A, p. 60. (Otaria.)
1872 A, figs. 4, 5.
Trouessart, E. L. 1897 A, p. 370.
Recent; Pacific coast from California to Japan. Pleistocene; California, *fide* Bowers.

ODOBENIDÆ.

This name is usually spelled *Odobænidæ*. Unless otherwise indicated, the following authors use the family name *Trichechidæ*.

Allen, J. A, 1880 A, pp. 3, 5.
Flower, W. H. 1883 D, p. 443.
Flower and Lydekker 1891 A, p. 596.
Gadow, H. 1898 A, p. 51.
Gill, T. 1866 A, pp. 7, 11. (Rosmaridæ.)
1872 B, pp. 27, 69, 70. (Rosmaridæ.)
Gray, J. E., 1821, Lond. Med. Repos., p. 303.
1825, Ann. Philos., p. 340.
1866 A, p. 33. (Trichechina.)
Haeckel, E, 1895 A, p. 590. (Trichechida.)
Huxley, T. H. 1872 A, p. 360.

Mivart, St. G. 1885 A. (Trichechina.)
Nicholson and Lydekker 1889 A, pp. 1422, 1424.
Reh, L. 1894 A, p. 12.
Roger, O. 1896 A, p. 75.
Turner, H. N. 1848 A, pp. 85, 88. (Trichecina, subfamily.)
Van Beneden, P. J. 1877 A, p. 89.
Winge, H. 1895 B, pp. 47, 73. (Trichechini.)
Wortman, J. L. 1886 A, p. 451.
Zittel, K. A. 1893 B, p. 685.

ODOBENUS Brisson. Type *Phoca rosmarus* Linn.

Brisson, A. D. 1762, Regnum Anim., ed. ii, pp. 12, 30–31.

Unless otherwise indicated, the following authors refer to this genus under the name *Trichechus*.

Allen, J. A. 1880 A, p. 14. (Odobænus.)
Blainville, H. M. D. 1864 A, ii, J. (Trichechus.)
Boyd, C. H. 1881 A.
Flower and Lydekker 1891 A, p. 597.
Gill, T. 1866 A, p. 13. (Rosmarus.)
Gratiolet, P. 1858 A. (Odobenotherium, type *O. lartetianus*.)
Gray, J. E. 1866 A, p. 35.
Kükenthal, W. 1894 A, p. 77.
Mivart, St. G. 1885 A, p. 493.
Murie, J. 1871 A.
Nicholson and Lydekker, 1889 A, p. 1424.
Owen, R. 1845 B, p. 510.
Palmer, T. S. 1899 A, p. 494.
Pictet, F. J. 1853 A, p. 233.
Rhoads, S. N. 1898 A, p. 200. (Rosmarus.)
Slade, D. D. 1888 A, p. 243.
Smith, J. 1895 A, p. 339, fig. 7.
Stannius, H. 1842 B.
Tomes, C. S. 1898 A, p. 478.
Trouessart, E. L. 1897 A, p. 375.
Turner, H. N. 1848 A.
Van Beneden, P. J. 1877 A, p. 89.
Wiegmann, F. A. 1838 A, p. 113. (Odobenus.)
Zittel, K. A. 1893 B, p. 685.

Odobenus rosmarus (Linn.).

Linnæus, C., 1758, Syst. Nat., ed. 10, i p. 38. (Phoca.)

Unless otherwise indicated, the following authors refer this species to *Trichechus*.

Allen, J. A. 1880 A, p. 23, figs. 15, 16, 18, 20, 23, 25, 26, 28, 30, 32, 34. (Synonymy and literature.)
Blainville, H. M. D. 1864 A, ii, J, pls. i, iv, vii, ix. (Trichechus.)
Gervais, P. 1859 A, p. 275. (Trichechus.)
Giebel, C. G. 1847 A, p. 222.
Goethe, J. W. 1831 A, p. 8, pl. iv. ("Walross.")
Gray, J. E. 1866 A, p. 37, fig. 12.
Gratiolet, P., 1858 A, pl. v. (Odobenotherium lartetianus.)
Jaeger, G. 1844 A. (Wallross.)
Kersten, H. 1821 A.
Kükenthal, W. 1894 A, p. 77.
Malmgren, A. J. 1864 A, p. 505, pl. vii. (Odobænus.)
    1865 A. (Odobænus.)
Murie, J. 1871 A.
Owen, R. 1853 A.
    1866 B, p. 498, fig. 339.
    1868 A, p. 338.
Peters, W. 1864 A, plate. (Odobænus rosmarus.)
Reh, L. 1894 A, p. 12.
Rhoads, S. N. 1898 A, p. 200. (Rosmarus.)
Roger, O. 1896 A, p. 75.
Stannius, H. 1842 B.
Trouessart, E. L. 1897 A, p. 375.
Van Beneden, P. J. 1877 A, p. 89, pl. viii, figs. 7–9.
Wiegmann, F. A. 1838 A, p. 113. (Odobenus.)

Recent; shores of Northern Atlantic and Arctic oceans from Labrador to Siberia. Pleistocene; Labrador.

Odobenus virginianus (De Kay).

De Kay, J. E. 1842 C, p. 56, pl. xix, fig. 1. (Trichechus.)
Agassiz, L. 1851 A, p. 252. ("Walrus.")
Allen, J. A. 1880 A, p. 57. (Odobænus.)
Amer. Naturalist 1871 B, p. 316.
Barton, B. S. 1805 A, p. 98. (Trichechus rosmarus.)
Cope, E. D. 1869 N, p. 740. (Trichechus rosmarus.)
    1874 T. ("Walrus.")
    1878 BB. (Trichechus rosmarus.)
Harlan, R. 1834 B, p. 72. (Trichechus rosmarus.)
    1835 B, p. 277. (Trichechus rosmarus.)
Leidy, J. 1857 G, p. 83, pl. iv; pl. v, fig. 1. (Trichechus.)
    1869 A, p. 416. (Trichechus rosmarus.)
    1876 A, p. 80. ("Walrus.")
    1877 A, p. 214, pl. xxx, fig. 6. (Rosmarus obesus.)
Lyell, C. 1843 C, p. 32. (Trichechus rosmarus.)
Mitchell, Smith, and Cooper 1828 A. ("Walrus.")
Newberry, J. S. 1870 C, p. 75. (Trichechus rosmarus.)
    1874 D, p. 71. (Trichechus rosmarus.)
Packard, A. S. 1867 A, pp. 243, 246. (Rosmarus obesus.)
Rhoads, S. N. 1898 A, p. 196.

Pleistocene; Maine, Nova Scotia, Massachusetts, New Jersey, Virginia, South Carolina.

Some of the remains described by the above authors may belong to *O. rosmarus;* indeed, it is not certain that any are distinct.

PHOCIDÆ.

Allen, J. A. 1880 A, p. 412.
Blainville, H. M. D. 1864 A, ii, I, p. 5; J, p. 1, pls. i–ix.
Cuvier, G. 1834 A, viii, pl. i, pp. 381–458, with plates.
Flower, W. H. 1883 D, p. 443.
Flower and Lydekker 1891 A, p. 600.
Gill, T. 1866 A, p. 5.
    1872 B, pp. 68, 69.

Gray, J. E. 1866 A, p. 1.
Huxley, T. H. 1872 A, p. 360.
Kükenthal, W. 1894 A, p. 97.
Leche, W. 1893 B.
Mivart, St. G. 1885 A.
Nicholson and Lydekker 1889 A, p. 1422.
Owen, R. 1845 B, p. 505.
    1868 A, p. 336.
Reh, L. 1894 A, p. 35.
Roger, O. 1896 A, p. 73.
Scott, W. B. 1892 A, p. 424.
Turner, H. N. 1848 A.
Van Beneden, P. J. 1877 A.
Winge, H. 1895 B, pp. 47, 72, 74, 76, 91.
Zittel, K. A. 1893 B, p. 683.

CYSTOPHORA Nilsson. Type *C. borealis* Nilsson=*Phoca cristata* Erxl.

Nilsson, S., 1820, Skand. Fauna, i, p. 382.
Allen, J. A. 1880 A, p. 723.
Flower and Lydekker 1891 A, p. 605.
Owen, R. 1868 A, p. 337.

Cystophora cristata (Erxl.).

Erxleben, C. P., 1777, Syst. Regn. Anim., p. 590. (Phoca.)
Allen, J. A. 1880 A, pp. 470, 724, figs. 52–56. (Synonymy and literature.)
Leidy, J. 1869 A, p. 416.
Lyell, C. 1843 C, p. 32. (C. proboscidea.)
Owen, R. 1866 B, p. 496.
Trouessart, E. L. 1897 A, p. 378.

Recent; along shores of Northern Atlantic; said by Lyell to have been found in Tertiary strata of Martha's Vineyard.

LOBODON Gray. Type *Phoca carcinophaga* Homb., Jacq.

Gray, J. E., 1844, Zool. Erebus and Terror, i, p. 5.
Flower and Lydekker 1891 A, p. 605.
Gray, J. E. 1866 A, p. 8, fig. 2.
Trouessart, E. L. 1897 A, p. 381. (Subgenus of Ogmorhinus.)

Lobodon vetus Leidy.

Leidy, J. 1853 C, p. 377, figure. (Stenorhynchus.)
Allen, J. A. 1880 A, p. 475.
Cope, E. D. 1869 N, p. 740.
Leidy, J. 1865 A, p. 2. (Stenorhynchus.)
    1869 A, p. 415.
Trouessart, E. L. 1897 A, p. 381. [Ogmorhinus (Lobodon).]

Miocene?; New Jersey.

PHOCA Linn. Type *P. vitulina* Linn.

Linnæus, C., 1758, Syst. Nat., ed. 10, i, p. 37.
Allen, J. A. 1880 A, p. 462.
Flower, W. H. 1883 D, p. 443.
    1885 A.
Flower and Lydekker 1891 A, p. 601.
Gray, J. E. 1866 A, p. 31.
Huxley, T. H. 1872 A, p. 361.
Mivart, St. G. 1885 A, p. 486.
Owen, R. 1866 B, p. 494.
Pictet, F. J. 1853 A, p. 232.
Toula, F. 1897 A.
Van Beneden, P. J. 1877 A.
Winge, H. 1895 B, pp. 47, 91.
Zittel, K. A. 1893 B, p. 684.

Phoca grœnlandica.

Allen, J. A. 1880 A, pp. 470, 630. (Synonymy and literature.)
Dawson, J. W. 1877 B.
Leidy, J. 1856 G, p. 90, pl. iii.
Leidy, J, 1869 A, p. 415.
Logan, W. E. 1863 A, p. 920.
Trouessart, E. L. 1897 A, p. 387. [Phoca (Pagophilus).]

Recent in Northern Atlantic and in Arctic Ocean around the poles. Pleistocene; Canada, Maine.

Phoca wymani Leidy.

Leidy, J. 1854 A, p. 8.
Allen, J. A. 1880 A, p. 471.
Cope, E. D. 1867 B, p. 132, in part.
    1867 C, pp. 151, 152, in part.
Leidy, J. 1869 A, p. 415, in part.
Roger, O. 1896 A, p. 74.
Wyman, J. 1850 B, p. 229, figs. 1–3 (?).

Miocene; Virginia.

See citations under *Delphinodon leidyi.*

Order PRIMATES.

Blainville, H. M. D. 1864 A, i, A, B, F, pls. i–xi.
Cope, E. D. 1873 E, pp. 546, 644.
    1880 B, p. 456. (Quadrumana.)
Flower, W. H. 1882 B.
    1883 A.
    1883 D, p. 444.
    1885 A.
Flower and Lydekker 1891 A, p. 680.
Fry, E. 1846 A.
Gaudry, A. 1878 B, p. 223. ("Les quadrumanes.")
Gill, T. 1872 A, p. 296.
    1872 B, pp. 1, 47, 50.
Gill and Coues 1877 A.
Hay, O. P. 1899 F, p. 682.
Hubrecht, A. A. W. 1896 A.
Huxley, T. H. 1872 A, p. 388.
Lydekker, R. 1885 B.
    1896 B.

Marsh, O. C. 1872 N. (Quadrumana.)
1872 S. (Quadrumana.)
1877 E.
Mivart, St. G. 1864 A.
1865 A.
1867 A.
1868 B.
1873 A.
1875 A.
Nicholson and Lydekker 1889 A, p. 1463.
Osborn, H. F. 1892 I.
1893 G, p. 493.
1898 A, p. 146.
Osborn and Earle 1895 A, p. 15.
Owen, R. 1835 A.
1843 A, p. 55. (Quadrumana.)
1845 B, p. 433. (Quadrumana.)
1859 C.
1866 B, p. 511. (Quadrumana.)
Owen, R. 1868 A, p. 313. (Quadrumana.
Parsons, F. G. 1899 A.
1900 A.
Paulli, S. 1900 B, p. 542.
Roger, O. 1896 A, p. 249.
Schlosser, M. 1887 B, p. 7. (Quadrumana.)
1889 A.
1890 D.
Scott, W. B. 1892 A, p. 417.
Slade, D. D. 1891 A.
1891 B.
Steinmann and Döderlein 1890 A, p. 741.
Topinard, P. 1892 A.
Tornier, G. 1888 A.
Trouessart, E. L. 1897 A, p. 1.
Weyhe, ——. 1875 A, p. 114.
Winge, H. 1895 A.
Zittel, K. A. 1893 B, pp. 685, 747.

Suborder PROSIMIÆ.

Branco, W. 1897 A, p. 30. ("Halbaffen.")
Cope, E. D. 1876 E, p. 86. (>Mesodonta.)
1877 K, pp. 85, 134. (>Mesodonta.)
1880 B, p. 456.
1882 A, p. 446. (Mesodonta.)
1882 E, p. 151.
1883 I, pp. 77, 79. (Prosimiæ, Mesodonta.)
1884 O, pp. 239, 739 (Prosimiæ; pp. 185, 211, 738 (Mesodonta).
1884 R, p. 60. (Lemuroidea.)
1885 K. (Lemuroidea.)
1888 EE, p. 164. (>Mesodonta.)
Flower, W. H. 1876 B, xiv, p. 11. (Lemuroidea.)
1882 B. (Lemuroidea.)
Flower and Lydekker 1891 A, p. 682. (Lemuroidea.)
Gill, T. 1872 A, p. 296.
Hubrecht, A. A. W. 1896 A, p. 150. (Lemures.)
Leche, W. 1897 C.
Lemoine, V. 1880 A, p. 587.
Lydekker, R. 1896 B. (Lemuroidea.)
Mivart, St. G. 1868 B.
Nicholson and Lydekker 1889 A, p. 1465. (Lemuroidea.)
Osborn, H. F. 1888 F, p. 1068. (Lemuroidea.)
1890 C, p. 55. (Mesodonta.)
1900 C, p. 567. (Mesodonta.)
Osborn and Wortman 1892 A, p. 102. (Lemuroidea, Mesodonta.)
Roger, O. 1896 A, p. 249.
Rütimeyer, L. 1888 A, p. 29. (>Mesodonta.)
Schlosser, M. 1887 B, p. 19. (>Pseudolemuridæ.)
Schmidt, O. 1886 A, p. 294.
Steinmann and Döderlein 1890 A, p. 742.
Trouessart, E. L. 1897 A, p. 54.
Winge, H. 1895 A, p. 12. (Lemuroidei.)
Zittel, K. A. 1893 B, pp. 686, 711, 725.

MIXODECTIDÆ.

Cope, E. D. 1883 I, p. 80. (Anaptomorphidæ, Myxodectidæ.)
1884 K, pp. 318, 319. (Anaptomorphidæ, Myxodectidæ.)
1884 O, p. 240. (Anaptomorphidæ, Myxodectidæ.)
1884 R, p. 60. (Anaptomorphidæ, Myxodectidæ.)
1885 K, pp. 459, 464. (Anaptomorphidæ, Myxodectidæ.)
Haeckel, E. 1895 A, pp. 600, 604. (Necrolemures, in part.)
Matthew, W. D. 1899 A, p. 29.
Osborn and Earle 1895 A, p. 16.
Osborn and Wortman 1892 A, pp. 101, 102.
Roger, O. 1896 A, p. 253. (Anaptomorphidæ.)
Trouessart, E. L. 1897 A, p. 66. (Tarsiidæ, in part.)
Winge, H. 1895 A, p. 12. (Tarsiidæ, in part; Tarsiinæ.)
Zittel, K. A. 1893 B, p. 696.

MIXODECTES Cope. Type *M. pungens* Cope.

Cope, E. D. 1883 M, p. 558.
Branco, W. 1897 A, p. 31.
Cope, E. D. 1884 K, p. 319.
1884 O, pp. xxxv, p. 240.
1885 K, p. 465.
Matthew, W. D. 1897 B, pp. 231, 265.
1897 C, p. 265.
1898 B, p. 369.
Nicholson and Lydekker 1889 A, p. 1467.
Osborn, H. F. 1898 A, p. 145.
Schlosser, M. 1887 B, pp. 40, 49.
Zittel, K. A. 1893 B, p. 697.

Mixodectes crassiusculus Cope.

Cope, E. D. 1883 M, p. 560.
1884 O, p. 242, pl. xxiv*f*, fig. 2.

Cope, E. D. 1888 CC, p. 304.
Matthew, W. D. 1899 A, p. 29.
Roger, O. 1896 A, p. 254.
Trouessart, E. L. 1897 A, p. 67.
Eocene (Torrejon); New Mexico.

Mixodectes pungens Cope.

Cope, E. D. 1883 M, p. 559.
Cope, E. D. 1884 O, p. 241, pl. xxiv*f*, fig. 1.
1885 K, p. 465, fig. 9.
1888 CC, p. 304.
Matthew, W. D. 1897 C, p. 266, fig. 1.
1899 A, p. 29.
Roger, O. 1896 A, p. 254.
Trouessart, E. L. 1897 A, p. 67.
Eocene (Torrejon); New Mexico.

ANAPTOMORPHUS Cope. Type *A. æmulus* Cope.

Cope, E. D. 1872 U, p. 554.
Branco, W. 1897 A, p. 31.
Cope, E. D. 1873 E, p. 549.
1877 K, p. 135.
1882 E, p. 152.
1882 N, p. 73.
1884 K, p. 319.
1884 O, pp. xxxv, 214, 240, 245.
1884 R, p. 60.
1885 K, p. 465.
1888 G, p. 8.
Filhol, H. 1874 A, p. 1.
1883 B, p. 3 (Anaptomorphus); p. 15 (Washakius).
1885 A.
Flower, W. H. 1882 B, p. 445.
Flower and Lydekker 1891 A, p. 697.
Hubrecht, A. A. W. 1896 A, p. 162.
Leidy, J. 1873 B, p. 123. (Washakius, type *W. insignis*.)
Nicholson and Lydekker 1889 A, p. 1467.
Osborn, H. F. 1888 F, p. 1077.
1892 I.
1895 C, p. 7, pl. AA, figs. 7, 9.
Osborn and Wortman 1892 A, p. 102.
Schlosser, M. 1887 B, p. 34 (Washakius=?Opisthotomus); pp. 39, 48 (Anaptomorphus).
Science 1885 A, p. 489.
Scott, W. B. 1892 A, p. 418.
Steinmann and Döderlein 1890 A, p. 744.
Trouessart, E. L. 1897 A, p. 67.
Winge, H. 1895 A, p. 15.
Zittel, K. A. 1893 B, p. 697.

Anaptomorphus æmulus Cope.

Cope, E. D. 1872 U, p. 554.
Cope, E. D. 1873 E, p. 549.
1884 O, p. 248, pl. xxv, fig. 10.
1885 K, p. 465, fig. 11.
Marsh, O. C. 1875 B, p. 239. (Syn. of Antiacodon nanus.)
Matthew, W. D. 1899 A, p. 38.
Nicholson and Lydekker 1889 A, p. 1468, fig. 1351.
Osborn and Wortman 1892 A, p. 103. (Antiacodon.)
Roger, O. 1896 A, p. 253. (A. aemulus, with "Washakius fallax" as a synonym.)
Trouessart, E. L. 1897 A, p. 67.
Eocene (Bridger); Wyoming.

Anaptomorphus homunculus Cope.

Cope, E. D. 1882 E, p. 152.
1882 N, p. 73.
1884 K, p. 466, fig. 12.
1884 O, p. 249, pl. xxiv*e*, fig. 1.
Matthew, W. D. 1899 A, p. 30. (Omomys.)
Nicholson and Lydekker 1889 A, p. 1467, fig. 1350.
Osborn, H. F. 1895 C, p. 11, fig D.
Osborn and Wortman 1892 A, p. 102, fig. 6.
Roger, O. 1896 A, p. 254.
Trouessart, E. L. 1897 A, p. 67.
Zittel, K. A. 1893 B, p. 697, fig. 576.
Eocene (Wasatch); Wyoming.

Anaptomorphus insignis (Leidy).

Leidy, J. 1873 B, pp. 123, 336, pl. xxvii, figs. 3, 4. (Washakius.)
Matthew, W. D. 1899 A, p. 38. (Syn. of A. æmulus.)
Trouessart, E. L. 1897 A, p. 67. (Anaptomorphus.)
Eocene (Bridger); Wyoming.

ANTIACODON Marsh. Type *A. venustus* Marsh.

Marsh, O. C. 1872 I, p. 210.
Cope, E. D. 1873 C, pp. 13, 17.
1875 L, p. 21.
Filhol, H. 1883 B, p. 17.
Marsh, O. C. 1875 B, p. 239.
1877 E.
Matthew, W. D. 1899 A, p. 38. (=?Omomys.)
Schlosser, M. 1887 B, p. 38.
Zittel, K. A. 1893 B, p. 697. (Syn. of Anaptomorphus.)

Antiacodon nanus Marsh.

Marsh, O. C. 1872 I, p. 213. (Hemiacodon.)
1875 B, p. 239. (Antiacodon: Anaptomorphus æmulus, a synonym.)
Matthew, W. D. 1899 A, p. 38. (Hemiacodon? nanus.)
Trouessart, E. L. 1897 A, p. 74. (Hemiacodon.)
Eocene (Bridger); Wyoming.

Marsh's *Antiacodon nanus* seems to be his earlier *Hemiacodon nanus*.

Antiacodon venustus Marsh.

Marsh, O. C. 1872 I, p. 210.
Cope, E. D. 1873 E, p. 607. (Syn. of A. pygmæus.)
1873 U, p. 1. (Syn. of A. pygmæus.)
Matthew, W. D. 1899 A, p. 38.
Roger, O. 1896 A, p. 253. (Sarcolemur.)
Trouessart, E. L. 1897 A, p. 67 (Syn. of A. æmulus); p. 73 (Sarcolemur).
Eocene (Bridger); Wyoming.

OMOMYS Leidy. Type *O. carteri* Leidy.

Leidy, J. 1869 B, p. 63.
Cope, E. D. 1875 C, p. 13.
    1877 K, p. 134.
    1884 O, pp. 215, 240.
Leidy, J. 1869 A, p. 408.
    1871 C, p. 364.
Nicholson and Lydekker 1889 A, p. 1467.
Osborn and Wortman 1892 A, p. 102.
Schlosser, M. 1887 B, p. 35.
Zittel, K. A. 1893 B, p. 697.

Omomys carteri Leidy.

Leidy, J. 1869 B, p. 63.
    1869 A, p. 408, pl. xxix, figs. 13, 14.
    1871 C, p. 365.
    1872 B, p. 356.
    1873 B, pp. 120, 336.
Matthew, W. D. 1899 A, p. 38.
Roger, O. 1896 A, p. 254.
Trouessart, E. L. 1897 A, p. 67.
Eocene (Bridger); Wyoming.

CYNODONTOMYS Cope. Type *C. latidens* Cope.

Cope, E. D. 1882 E, p. 151.
    1883 M, p. 559.
    1884 K, p. 319.
    1884 O, pp. xxxv, pp. 239, 240, 243.
    1885 K, p. 465.
Nicholson and Lydekker 1889 A, p. 1467.
Schlosser, M. 1887 B, pp. 40, 48.
Zittel, K. A. 1893 B, p. 698.

Cynodontomys latidens Cope.

Cope, E. D. 1882 E, p. 151.
    1884 O, p. 244, pl. xxiv*e*, fig. 2.
    1885 K, p. 465, fig. 10.
Matthew, W. D. 1899 A, p. 30.
Roger, O. 1896 A, p. 254.
Trouessart, E. L. 1897 A, p. 68.
Eocene (Wasatch); Wyoming.

PROSINOPA Trouessart. Type *Sinopa eximia* Leidy.

Trouessart, E. L. 1897 A, p. 68.
Scott, W. B. 1892 B, p. 310. (Sinopa.)

Prosinopa eximia (Leidy).

Leidy, J. 1873 B, pp. 118, 316, pl. xvi, fig. 45. (Sinopa.)
Matthew, W. D. 1899 A, p. 38.
Roger, O. 1896 A, pp. 35, 254. (Sinopa?.)
Scott, W. B. 1892 B, p. 310. (Sinopa?.)
Trouessart, E. L. 1897 A, p. 68.
Eocene (Bridger); Wyoming.

LIMNOTHERIIDÆ.

Marsh, O. C. 1875 B, p. 239.
Bronn, H. G. 1838 A, p. 1224, pl. xlvi, fig. 6. (Adapis.)
Cope, E. D. 1884 K, p. 318.
    1884 O, pp. 213, 240.
    1885 K, p. 459.
    1888 EE, p. 163.
Filhol, H. 1883 B, p. 19. (Adapis.)
Flower, W. H. 1882 B, p. 444. (Adapis.)
Gaudry, A. 1878 B, p. 226. (Adapis.)
Haeckel, E. 1895 A, pp. 600, 604. (Necrolemures, in part.
Leche, W. 1897 C, p. 147. (Adapis.)
Marsh, O. C. 1875 B, p. 240. (Lemuravidæ.)
Marsh, O. C. 1876 G, p. 60. (Limnotheriidæ, Lemuravidæ.)
    1877 E.
    1895 D, p. 498. (Limnotheriidæ, Lemuravidæ.)
Nicholson and Lydekker 1889 A, p. 1466. Adapidæ, Hyopsodontidæ.)
Schlosser, M. 1887 B, p. 21 (Adapidæ); pp. 21, 54 (Hyopsodidæ).
Steinmann and Döderlein 1890 A, p. 743. (Adapidæ, Hyopsodidæ.)
Zittel, K. A. 1893 B, p. 689. (Pachylemuridæ.)

TOMITHERIUM Cope. Type *T. rostratum* Cope.

Cope, E. D. 1872 E, p. 470.
    1873 E, pp. 546, 645.
    1876 E.
    1877 K, p. 134.
    1884 O, pp. 216, 218.
    1885 K, pp. 460, 461.
Flower and Lydekker 1891 A, p. 698.
Lockwood, S. 1886 A, p. 324.
Matthew, W. D. 1899 A, p. 37. (Syn.? of Notharctus.)
Nicholson and Lydekker 1889 A, p. 1466.
Osborn, Scott, and Speir 1878 A, p. 13.
Schlosser, M. 1887 B, p. 22.
Zittel, K. A. 1893 B, p. 693.

Tomitherium affine (Marsh).

Marsh, O. C. 1872 I, p. 207. (Limnotherium.)
Cope, E. D. 1884 O, p. 223. (Limnotherium.)
Marsh, O. C. 1875 B, p. 239. (Limnotherum; T. rostratum, a syn.)
Matthew, W. D. 1899 A, p. 37. (Notharctus.)
Trouessart, E. L. 1897 A, p. 70. (Syn. of T. rostratum.)
Eocene (Bridger); Wyoming.
Possibly identical with *T. rostratum* Cope.

Tomitherium rostratum Cope.

Cope, E. D. 1872 E, p. 470.

Cope, E. D. 1873 E, p. 548.
1873 U, p. 3.
1876 E.
1884 O, p. 221, pl. xxv, figs. 1-9.
1885 K, p. 464, figs. 5-7.
Marsh, O. C. 1875 B, p. 239. (Syn. of Limnotherium affine.)
Matthew, W. D. 1899 A, p. 37. (Syn. of Notharctus tenebrosus.)
Osborn, Scott, and Speir 1878 A, p. 13.
Roger, O. 1896 A, p. 251.
Trouessart, E. L. 1897 A, p, 70.
Eocene (Bridger); Wyoming.

LIMNOTHERIUM Marsh. Type *L. tyrannus* Marsh.

Marsh, O. C. 1871 D, p. 43.
Cope, E. D. 1884 O, p. 220.
1887 S, p. 253.
Marsh, O. C. 1872 N.
1875 B, p. 239.
1877 E.
1895 D, p. 498.
Matthew, W. D. 1899 A, p. 37. (Syn.? of Notharctus.)
Nicholson and Lydekker 1889 A, p. 1372.
Schlosser, M. 1887 B, p. 36. (Syn. of Tomitherium.)
Trouessart, E. L. 1897 A, p. 70. (Syn. of Tomitherium.)
Zittel, K. A. 1893 B, p. 693. (Syn. of Tomitherium.)

Limnotherium tyrannus Marsh.

Marsh, O. C. 1871 D, p. 43.
Cope, E. D. 1872 E, p. 471. (Notharctus.)
King, C. 1878 A, p. 403.
Leidy, J. 1872 B, p. 364.
Matthew, W. D. 1899 A, p. 37. (Notharctus.)
Roger, O. 1896 A, p. 251. (Tomitherium.)
Trouessart, E. L. 1897 A, p. 70. (Tomitherium.)
Eocene (Bridger); Wyoming.

NOTHARCTUS Leidy. Type *N. tenebrosus* Leidy.

Leidy, J. 1870 Q, p. 114.
Cope, E. D. 1872 E, p. 471.
1873 E, p. 548.
1877 K, p. 135.
1879 A, p. 43. (Syn. of Adapis.)
1884 O, p. 34.
1885 K, p. 460,
Filhol, H. 1883 B, p. 19.
Flower and Lydekker 1891 A, p. 698.
Leidy, J. 1871 C, p. 344.
1873 B, p. 86.
Marsh, O. C. 1875 B, p. 239.
1894 L, p. 263.
Matthew W. D. 1899 A, p. 37.
Nicholson and Lydekker 1889 A, p. 1466.
Schlosser, M. 1887 B, p. 22.
Zittel, K. A. 1893 B, p. 694.

Notharctus tenebrosus Leidy

Leidy, J. 1870 Q, p. 114.
Cope, E. D. 1872 E, p. 471.
1885 K, p. 461, fig. 4.
Leidy, J. 1871 C, p. 344.
1872 B, p. 364.
1873 B, pp. 86, 329, pl. vi, figs. 36, 37.
Matthew, W. D. 1899 A, p. 37.
Roger, O. 1896 A, p. 252.
Trouessart, E. L. 1897 A, p. 70.
Eocene (Bridger); Wyoming.

LEMURAVUS Marsh. Type *L. distans* Marsh.

Marsh, O. C. 1875 B, p. 239.
Cope, E. D. 1877 K, p. 148.
Marsh, O. C. 1876 G, p. 60.
1877 E.
1895 D, p. 498.
Nicholson and Lydekker 1889 A, p. 1468.
Zittel, K. A. 1893 B, p. 691.

Lemuravus distans Marsh.

Marsh, O. C. 1875 B, p. 238.
King, C. 1878 A, p. 403.
Matthew, W. D. 1899 A, p. 37. (Syn. of Hyopsodus paulus.)
Roger, O. 1896 A, p. 250.
Trouessart, E. L. 1897 A, p. 70.
Eocene (Bridger); Wyoming.

PELYCODUS Cope. Type *Prototomus jarrovii* Cope.

Cope, E. D. 1875 C, p. 13.
1875 L, p. 21.
1882 E, p. 151.
1884 O, pp. 216, 224.
1885 K, pp. 459, 467.
Flower and Lydekker 1891 A, p. 699.
Nicholson and Lydekker 1889 A, p. 1465.
Osborn, H. F. 1888 A, p. 1076.
Rütimeyer, L. 1888 A, p. 34.
1891 A, p. 115.
Schlosser, M. 1887 B, p. 21.
1894 A, p. 159.
Steinmann and Doderlein 1890 A, p. 743.
Zittel, K. A. 1893 B, p. 691.

Pelycodus frugivorus Cope.

Cope, E. D. 1875 C, p. 14.
1877 K, p. 144, pl. xxxix, fig. 16. (Tomitherium.)
1881 D, p. 187. (P. nunienum.)

Cope, E. D. 1882 E, p. 151.
1884 O, pp. 182, 225, 230, pl. xxv*a*, figs. 4, 5.
Earle, C. 1898 A, p. 262.
Matthew, W. D. 1899 A, pp. 30, 34.
Roger, O. 1896 A, p. 250. (P. frugivorus, P. nunienum.)
Rütimeyer, L. 1888 A, p. 35.
Trouessart, E. L. 1897 A, p. 71.
Zittel, K. A. 1893 B, p. 692, fig. 570.
Eocene (Wasatch, Wind River); New Mexico, Wyoming.

Pelycodus jarrovii Cope.

Cope, E. D. 1874 O, p. 14. (Prototomus.)
1875 C, p. 14.
1876 E, p. 88. (Tomitherium.)
1877 K, pp. 137, 141, pl. xxxix, figs. 17, 18; pl. xl, figs. 1-15. (Tomitherium.)
1881 D, p. 187.
1882 E, p. 151.
1884 O, pp. 225, 228.
Matthew, W. D. 1899 A, p. 30.
Roger, O. 1896 A, p. 250.
Trouessart, E. L. 1897 A, p. 70.
Eocene (Wasatch); New Mexico, Wyoming.

Pelycodus tutus Cope.

Cope, E. D. 1877 K, p. 141, pl. xxxix, fig. 19; pl. xl, figs. 16-25. (Tomitherium.)
1876 E, p. 88. (No description.)
1881 D, p. 187.
1882 E, p. 151.
1884 O, pp. 224, 225, 228, pl. xxv*a*, figs. 1-3.
1885 K, p. 468, figs. 13, 16.
Matthew, W. D. 1899 A, pp. 30, 34.
Roger, O. 1896 A, p. 250.
Rütimeyer, L. 1888 A, p. 35.
Trouessart, E. L. 1897 A, p. 71.
Zittel, K. A. 1893 B, p. 692, fig. 569.
Eocene (Wasatch, Wind River); New Mexico, Wyoming, Colorado.

HYOPSODUS Leidy. Type *H. paulus* Leidy.

Leidy, J. 1870 O, p. 110.
Cope, E. D. 1875 C, pp. 13, 18.
1875 L, p. 21.
1877 K, pp. 135, 150.
1882 GG, p. 1029. (Diacodexis, type *D. latecuneus.*)
1884 O, pp. 216, 234 (Hyopsodus); pp. 386, 492 (Diacodexis).
1885 K, p. 460.
1885 X, p. 1208.
1887 S, p. 257.
Earle, C. 1898 A, p. 262.
Flower and Lydekker 1891 A, p. 697.
Gaudry, A. 1877 A.
Leidy, J. 1871 C, p. 354.
1872 B, p. 362.
1872 C, p. 20.
1873 B, p. 75.
Lydekker, R. 1885 A.
Marsh, O. C. 1871 D, p. 42. (Hypsodus.)
1875 B, p. 239.
1877 E.
Nicholson and Lydekker 1889 A, p. 1465.
Osborn, H. F. 1888 E.
Osborn, Scott, and Speir 1878 A, p. 15.
Pavlow, M. 1887 A, p. 369. (Diacodexis.)
1888 A, p. 135.
Rütimeyer, L. 1888 A, p. 34.
1891 A, p. 118.
Schlosser, M. 1887 B, p. 21.
1894 A, p. 159.
Scott, W. B. 1892 A, p. 418.
Steinmann and Döderlein 1890 A, p. 743.
Zittel, K. A. 1893 B, p. 220 (Diacodexis); p. 693 (Hyopsodus).
Scott and Osborn 1887 A, p. 255.
Trouessart, E. L. 1897 A, p. 71.
Eocene (Bridger, Uinta); Wyoming.

Hyopsodus gracilis Marsh.

Marsh, O. C. 1871 D, p. 42. (Hypsodus.)
Cope, E. D. 1872 E, p. 471. (Notharctus.)
King, C. 1878 A, p. 407.
Leidy, J. 1872 B, p. 363.
1872 C, p. 20.
Matthew, W. D. 1899 A, pp. 37, 49.
Roger, O. 1896 A, p. 251.
Scott, W. B. 1890 A, p. 471.

Hyopsodus laticuneus (Cope).

Cope, E. D. 1882 E, pp. 179, 181. (Phenacodus laticuneus, in part.)
1882 GG, p. 1029. (Diacodexis.)
1884 O, p. 492 pl. xxv*e*, figs. 17, molars; p. 18 (Diacodexis).
1884 AA, p. 901, figs. 24*b*, *c*. (Diacodexis.)
Matthew, W. D. 1899 A, p. 30.
Pavlow, M. 1887 A, p. 369. (Diacodexis.)
Roger, O. 1896 A, p. 167. (Diacodexis?.)
Trouessart, E. L. 1897 A, p. 726.
Eocene (Wasatch); Wyoming.

Dr. Matthew (op. cit.) states that the molars, upper and lower, of Cope's *D. latecuneus* belong to *Hyopsodus*, the premolars to *Hyracotherium index*.

Hyopsodus lemoinianus Cope.

Cope, E. D. 1882 E, p. 148,
1884 O, pp. 235, 236, pl. xxiv*e*, figs. 8, 9.
Matthew, W. D. 1899 A, pp. 30, 34.
Roger, O. 1896 A, p. 251.
Trouessart, E. L. 1897 A, p. 71.
Eocene (Wasatch, Wind River); Wyoming.

Hyopsodus minusculus Leidy.

Leidy, J. 1873 B, pp. 81, 320, pl. xxvii, fig. 5.
Cope, E. D. 1875 C, p. 18. (Syn. of H. vicarius.)
1880 O, p. 908. (Syn. ? of H. vicarius.)
1884 O, p. 237. (Syn. of H. vicarius.)
King, C. 1878 A, p. 403,
Matthew, W. D. 1899 A, p. 37.
Roger, O. 1896 A, p. 251.
Trouessart, E. L. 1897 A, p. 71.
Eocene (Bridger); Wyoming.
May be identical with *H. vicarius.*

Hyopsodus miticulus Cope.

Cope, E. D. 1874 O, p. 8. (Esthonyx.)
1875 C, p. 18.
1877 K, p. 150, pl. xlv, figs. 10-12.

Cope, E. D. 1882 E, p. 149.
1884 O, p. 235.
Matthew, W. D. 1899 A, pp. 30, 34.
Roger, O. 1896 A, p. 251.
Trouessart, E. L. 1897 A, p. 71.
Eocene (Wasatch, Wind River); New Mexico.

Hyopsodus paulus Leidy.

Leidy, J. 1870 O, p. 110.
Cope, E. D. 1873 E, p. 609.
1873 U, p. 1.
1875 C, p. 18.
1881 D, p. 186.
1882 E, p. 148.
1884 O, pp. 235, 237.
1885 K, p, 460, fig. 2.
1887 I, p. 657.
King, C. 1878 A, p. 403.
Leidy, J. 1871 C, p. 354.
1872 B, p. 363.
1873 B, pp. 75, 320, pl. vi, figs. 1-9, 18-20.
Marsh, D. C. 1871 D, p. 42. (Hypsodus.)
Matthew, W. D. 1899 A, pp. 30, 34, 37.
Osborn, Scott, and Speir 1878 A, p. 15.
Pavlow, M. 1887 A, p. 371.
Roger, O. 1896 A, p. 251.
Trouessart, E. L. 1897 A, p. 71.
Eocene (Wasatch, Wind River, Bridger); Wyoming.

Hyopsodus powellianus Cope.

Cope, E. D. 1884 O, p. 235, pl. xxiiid, figs. 3. 4.
1882 E, pp. 179, 180. (Phenacodus zuniensis.)
Matthew, W. D. 1897 C, p. 270.
1899 A, p. 30.
Osborn, H. F. 1897 G, p. 256.
Roger, O. 1896 A, p. 251.
Trouessart, E. L. 1897 A, p. 71.
Eocene (Wasatch); Wyoming.

Hyopsodus vicarius Cope.

Cope, E. D. 1873 U, p. 1. (Microsyops.)
1873 E, p. 609. (Microsyops.)
1875 C, p. 18.
1880 O, p. 908.
1881 D, p. 186.
1882 E, p. 149.
1884 O, pp. 235, 237, pl. xxiv, figs. 20, 21; pl. xxva, fig. 7.
1885 K, p. 460, fig. 2.
Lydekker, R. 1885 E, p, 470.
Matthew, W. D. 1899 A, pp. 30, 34, 37.
Nicholson and Lydekker 1889 A, p. 1465, fig. 1348
Roger, O. 1896 A, p. 251.
Schlosser, M. 1887 B, p. 21.
Trouessart, E. L. 1897 A, p. 71.
Eocene (Wasatch, Wind River, Bridger); Wyoming.

MICROSYOPS Leidy. Type *M. gracilis* Leidy.

Leidy, J. 1872 C, p. 20.
Cope, E. D. 1875 C, p. 13.
1877 K, p. 134.
1884 K, p. 319.
1884 O, pp. xxxv, 215, 216, 240.
1885 K, p. 465.
Flower and Lydekker 1891 A, p. 698.
Gaudry, A. 1877 A.
Leidy, J. 1873 B, p. 82.
Marsh, O. C. 1875 B, p. 239.
Matthew, W. D. 1897 C, p. 265.
Nicholson and Lydekker 1889 A, p. 1466
Schlosser, M. 1887 B, pp. 40, 49.
Zittel, K. A. 1893 B, p. 693.

Microsyops elegans (Marsh).

Marsh, O. C. 1871 D, p. 43. (Limnotherium.)
Cope, E. D. 1884 O, p. 217.
1887 S, p. 257, fig. 30.
King, C. 1878 A, p. 403.
Leidy, J. 1872 B, p. 364. (Limnotherium.)
1873 B, pp. 83, 320.
Matthew, W. D. 1899 A, p. 37.
Roger, O. 1896 A, p. 251 (syn. of M. gracilis); p. 252 (Notharctus).
Trouessart, E. L. 1897 A, p. 72.
Eocene (Bridger); Wyoming.

Microsyops gracilis Leidy.

Leidy, J. 1872 C, p. 20.
Cope, E. D. 1884 O, p. 216.
1885 K, p. 465, fig. 2.
Leidy, J. 1873 B, p. 83, pl. vi, figs. 14-17.
Marsh, O. C. 1881 D, p. 188.
Matthew, W. D. 1899 A, pp. 30, 34, 37.
Roger, O. 1896 A, p. 251.
Eocene (Wasatch, Wind River, Bridger); Wyoming.

Microsyops scottianus Cope.

Cope, E. D. 1881 D, p. 188.
1884 O, p. 217, pl. xxiva, fig. 2.
Matthew, W. D. 1899 A, p. 34.
Roger, O. 1896 A, p. 251.
Trouessart, E. L. 1897 A, p. 72.
Eocene (Wind River); Wyoming.

Microsyops speirianus Cope.

Cope, E. D. 1880 O, p. 908.
1881 D, p. 188.
1882 C, p. 463. (M. spierianus.)
1884 O, p. 216, pl. xxva, fig, 8. (M. spierianus.)
Matthew, W. D. 1899 A, p. 30.
Roger, O. 1896 A, p. 251.
Trouessart, E. L. 1897 A, p. 72.
Eocene (Wind River); Wyoming.

Microsyops uintensis Osborn.

Osborn, H. F. 1895 A, p. 77, fig. 1.
Matthew, W. D. 1899 A, p. 49.
Roger, O. 1896 A, p. 251.
Trouessart, E. L. 1897 A, p. 72.
Eocene (Uinta); Wyoming.

MICROSUS Leidy. Type *M. cuspidatus* Leidy.

Leidy, J. 1870 Q, p. 11.
1871 C, p. 354.
1872 B, p. 363.
1873 B, p. 81.
Trouessart, E. L. 1897 A, p. 72. (Syn. of Microsyops.)
Zittel, K. A. 1893 B, pp. 688, 693.

Microsus cuspidatus Leidy.

Leidy, J. 1870 Q, p. 113.
1871 C, p. 354.
1872 B, p. 363.
1873 B, pp. 81, 321, pl. vi, figs. 10, 11.
Matthew, W. D. 1899 A, p. 37.
Trouessart, E. L. 1897 A, p. 72. (Syn. of Microsyops gracilis.)
Eocene (Bridger); Wyoming.

MENOTHERIUM Cope. Type *M. lemurinum* Cope.

Cope, E. D. 1873 R, p. 419.
1874 B, p. 510.
1875 N, p. 256.
1884 O, pp. 788, 808.
Marsh, O. C. 1875 B, p. 240. (Laopithecus, type *L. robustus.*)
1877 E.
Matthew, W. D. 1899 A, p. 59. (Syn. of Leptochœrus.)
Scott, W. B. 1890 A, p. 471. (Menotherium, Laopithecus.)
Zitttel, K. A. 1893 B, p. 696.

Menotherium lemurinum Cope.

Cope, E. D. 1873 R, p. 419.
1874 B, p. 510.
1874 P, p. 22.
Cope, E. D. 1884 O, p. 808, pl. lxvi, figs. 34–36.
Matthew, W. D. 1899 A, p. 60. (Leptochœrus.)
Trouessart, E. L. 1897 A, p. 72.
Oligocene (White River); Colorado.

Menotherium robustum (Marsh).

Marsh, O. C. 1875 B, p. 240. (Laopithecus.)
King, C. 1878 A, p. 411. (Laopithecus.)
Marsh, O. C. 1893 D, p. 412, pl. x, fig. 5. (Laopithecus.)
Matthew, W. D. 1889 A, p. 59. (Syn. of Leptochœrus spectabilis.)
Roger, O. 1896 A, p. 252. (Laopithecus.)
Trouessart, E. L. 1897 A, p. 72. (Syn. of M. lemurinum.)
Oligocene (White River); 30 miles south of Black Hills, South Dakota.

INDRODON Cope. Type *I. malaris* Cope.

Cope, E. D. 1884 K, pp. 318, 319.
1884 O, p. xxxv.
1884 R, p. 60.
1885 K, p. 465.
Flower and Lydekker 1891 A, p. 699.
Matthew, W. D. 1897 C, p. 265.
Osborn and Earle 1895 A, p. 16.
Zittel, K. A. 1893 B, p. 696.

Indrodon malaris Cope.

Cope, E. D. 1884 K, p. 318.
Cope, E. D. 1884 R, p. 61.
1885 K, p. 465.
1888 CC, p. 304.
Matthew, W. D. 1897 C, p. 320.
1899 A, p. 29.
Osborn and Earle 1895 A, p. 16, figs. 3–5.
Roger, O. 1896 A, p. 252.
Trouessart, E. L. 1897 A, p. 72.
Eocene (Torrejon); New Mexico.

OPISTHOTOMUS Cope. Type *O. astutus* Cope.

Cope, E. D. 1875 C, pp. 13, 15.
1877 K, pp. 135, 151.
1884 O, p. 216.
1885 K, p. 460.
Osborn, Scott, and Speir 1878 A, p. 17.
Schlosser, M. 1887 B, p. 34. (=?Washakius.)
Zittel, K. A. 1893 B, p. 696.

Opisthotomus astutus Cope.

Cope, E. D. 1875 C, p. 16.
1877 K, p. 152, pl. xlv, fig. 9.
Osborn, Scott, and Speir 1878 A, p. 17.
Roger, O. 1896 A, p. 252.
Trouessart, E. L. 1897 A, p. 73.
Eocene; New Mexico, Wyoming.

Opisthotomus flagrans Cope.

Cope, E. D. 1875 C, p. 16.
1877 K, p. 152, pl. xlv, fig. 8.
Roger, O. 1896 A, p. 252.
Trouessart, E. L. 1897 A, p. 73.
Eocene; New Mexico.

APHELISCUS Cope. Type *A. insidiosus* Cope.

Cope, E. D. 1875 C, pp. 13, 16.
1877 K, pp. 135, 137.
1884 O, p. 216.
1885 K, p. 460.
Zittel, K. A. 1893 B, p. 696.

Apheliscus insidiosus Cope.

Cope, E. D. 1874 O, p. 14. (Prototomus.)
Cope, E. D. 1875 C, p. 17.
1877 K, p. 147.
1885 K, p, 460.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 73.
Eocene; New Mexico.

SARCOLEMUR Cope. Type *Antiacodon furcatus* Cope.

Cope, E. D. 1875 N, p. 256.
1877 K, pp. 134, 147.
1884 O, pp. 216, 233.
1885 K, p. 460.
Trouessart, E. L. 1898 A, p. 73.
Zittel, K. A. 1893 B, p. 73.

Sarcolemur crassus Cope.

Cope, E. D. 1875 C, p. 17. (Antiacodon.)
1877 K, p. 149, pl. xlv, fig. 16.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 73.
Eocene (Wasatch); New Mexico.

Sarcolemur mentalis Cope.

Cope, E. D. 1875 C, p. 17. (Antiacodon.)
1875 N, p. 256.
1877 K, p. 149, pl. xlv, fig. 15.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 73.
Eocene (Wasatch); New Mexico.

Sarcolemur pygmæus Cope.

Cope, E. D, 1872 M, p. 2 of Palæont. Bull. (Lophiotherium.)
1872 M (1873), p. 461. (Hyopsodus.)
1873 E, p. 607 (Antiacodon pygmæus); p. 608 (A. furcatus).
1873 U, p. 1. (Antiacodon pygmæus, Antiacodon furcatus.)
1875 N, p. 256. (S. furcatus, S. pygmæus.)
1877 K, p. 148. (S. pygmæus, S. furcatus.)
1884 O, p. 233, pl. xxiv, figs. 18, 19.
Matthew, W. D. 1899 A, p. 38.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 73.
Eocene (Bridger); Wyoming.

HIPPOSYUS Leidy. Type *H. formosus* Leidy.

Leidy, J. 1872 D, p. 37.
Cope, E. D. 1874 M, p. 82.
1887 S, p. 258.
Leidy, J. 1873 B, p. 90.
Marsh, O. C. 1875 B, p. 239.
1877 E.
Schlosser, M. 1887 B, p. 36.
Zittel, K. A. 1893 B, p. 696.

Hipposyus formosus Leidy.

Leidy, J. 1872 D, p. 37.
1873 B, pp. 90, 321, pl. vi, fig. 41; pl. xxvii, figs. 1, 2.
Matthew, W. D. 1899 A, p. 37.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 73.
Eocene (Bridger); Wyoming.

Hipposyus robustior Leidy.

Leidy, J. 1872 B, p. 364. (Notharctus.)
Cope, E. D. 1872 E, p. 471. (Notharctus.)
Leidy, J. 1873 B, pp. 93, 321, pl. vi, fig. 40.
Matthew, W. D. 1899 A, p. 37.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 74.
Eocene (Bridger); Wyoming.

BATHRODON Marsh. Type *B. typus* Marsh.

Marsh, O. C. 1872 I, p. 211.
Cope, E. D. 1882 E, p. 165.
Marsh, O. C. 1875 B, p. 238.
1877 A, p. 81.
1877 E.
Schlosser, M. 1887 B, p. 37.
Zittel, K. A. 1893 B, p. 696.

Bathrodon annectens Marsh.

Marsh, O. C. 1872 I, p. 211.
Matthew, W. D. 1899 A, p. 37.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 74.
Eocene (Bridger); Wyoming.

Bathrodon typus Marsh.

Marsh, O. C. 1872 I, p. 211.
Matthew, W. D. 1899 A, p. 37.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 74.
Eocene (Bridger); Wyoming.

TELMALESTES Marsh. Type *T. crassus* Marsh.

Marsh, O. C. 1872 I, p. 206.
Cope, E. D. 1877 K, p. 148. (Telmatolestes.)
Marsh, O. C. 1872 N, p. 405. (Telmatolestes.)
1875 B, p. 239. (Telmatolestes.)
1877 E. (Telmatolestes.)
Nicholson and Lydekker 1889 A, p. 1466. (Telmatolestes.)
Schlosser, M. 1887 B, p. 37. (Telmatolestes.)
Trouessart, E. L. 1897 A, p. 74. (Telmatolestes.)
Zittel, K. A. 1893 B, p. 696. (Telmatolestes.)

Telmalestes crassus Marsh.

Marsh, O. C. 1872 I, p. 206.
Matthew, W. D. 1899 A, p. 37.
Roger, O. 1896 A, p. 253. (Telmatolestes.)
Schlosser, M. 1887 B, p. 37.
Trouessart, E. L. 1897 A, p. 74.
Eocene (Bridger); Wyoming.

HEMIACODON Marsh. Type *H. gracilis* Marsh.

Marsh, O. C. 1872 I, p. 212.
1877 E.
Schlosser, M. 1887 B, p. 37.
Zittel, K. A. 1893 B, p. 688.

Hemiacodon gracilis Marsh.

Marsh, O. C. 1872 I, p. 212.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A. p. 74.
Eocene (Bridger); Wyoming.

Hemiacodon pucillus Marsh.

Marsh, O. C. 1872 I, p. 213.
Matthew, W. D. 1899 A, p. 38.
Roger, O. 1896 A, p. 253. (H. pusillus.)
Trouessart, E. L. 1897 A, p. 74. (H. pusillus.)
Eocene (Bridger); Wyoming.

THINOLESTES Marsh. Type *T. anceps* Marsh.

Marsh, O. C. 1872 I, p. 205.
1872 N.
1875 B, p. 239.
1877 E.
Nicholson and Lydekker 1889 A, p. 1466
Schlosser, M. 1887 B, p. 37.
Zittel, K. A. 1893 B, p. 696.

Thinolestes anceps Marsh.

Marsh, O. C. 1872 I, p. 205.
Matthew, W. D. 1899 A, p. 37.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 74.
Eocene (Bridger); Wyoming.

STENACODON Marsh. Type *S. rarus* Marsh.

Marsh, O. C. 1872 I, p. 210.
Schlosser, M. 1887 B, p. 37.
Zittel, K. A. 1893 B, p. 696.

Stenacodon rarus Marsh.

Marsh, O. C. 1872 I, p. 210.
Marsh, O. C. 1894 L, p. 265.
Matthew, W. D. 1899 A, p. 48.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 74.
Eocene (Bridger); Wyoming.

MESACODON Marsh. Type *M. speciosus* Marsh.

Marsh, O. C. 1872 I, p. 212.
1875 B, p. 239.
1877 E.
Schlosser, M. 1887 B, p. 37.
1890 B, p. 64.
Zittel, K. A. 1893 B, p. 696.

Mesacodon speciosus Marsh.

Marsh, O. C. 1872 I, p. 212.
Matthew, W. D. 1899 A, p. 38.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 74.
Eocene (Bridger); Wyoming.

PALÆACODON Leidy. Type *P. verus* Leidy.

Leidy, J. 1872 C, p. 21.
1873 B, p. 122,
Marsh, O. C. 1872 I, p. 224.
1875 B, p. 239.
1877 E.
Schlosser, M. 1887 B, pp. 35, 144.
Zittel, K. A. 1893 B, p. 688.

Palæacodon vagus Marsh.

Marsh, O. C. 1872 I, p. 224.
King, C. 1878 A, p. 403.
Matthew, W. D. 1899 A, p. 38.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 74.
Eocene (Bridger); Wyoming.

Palæacodon verus Leidy.

Leidy, J. 1872 C, p. 21.
King, C. 1878 A, p. 403.
Leidy, J. 1872 B, p. 356.
1873 B, pp. 122, 336, pl. vi, fig. 46.
Marsh, O. C. 1872 I, p. 224.
Matthew, W. D. 1899 A, p. 38.
Roger, O. 1896 A, p. 253.
Trouessart, E. L. 1897 A, p. 74.
Eocene (Bridger); Wyoming

ADDENDA ET CORRIGENDA.

Page 131, second column, line 15. For "Lazier," read "Laizer."

Page 230. Under Trouessart, E. L., 1897 A, instead of "pp. 665–1264," read "pp. 1–664." Wherever after page 716 of the present Bibliography and Catalogue Trouessart, E. L., 1898 A, is quoted, "1897" must be substituted for "1898."

Page 274. For "*EUSELACHII*," read "*ARISTOSELACHII.*" *Euselachii* has recently been employed by Parker and Haswell in a different sense.

Page 304. Under *Otodus divaricatus* insert "Leidy, J." before "1873 B," etc.

Page 361. Above "Osteolepidæ" insert the following: **Spermatodus pustulosus** Cope. *Cope, E. D.* 1894 F, p. 438, text fig. 4, Permian, Texas. Both genus and species are new.

Page 387. Under *Empo nepaholica*, after "Stewart, A. 1900 A. p. 332," insert "pl. lix, figs. 1–9; pl. lxi figs. 2–5."

Page 393. Under the genus *Anogmius* insert "Cope, E. D., 1877 G, p. 584."

Page 399. Under *Syllæmus latifrons*, after "1877 X. p. 27," insert "pl. xxiii, fig. 1."

Page 442. Under *Lytoloma platyops*, after "Cope, E. D., 1869 M, p. 149," insert "pl. vi."

Page 548. Under *Palæosauropus primævus*, instead of "Silliman, B," read "Amer. Jour. Science."

Page 620. *Hipparion minimum* was orginally described as *Anchitherium minimum*, and ought to have been arranged under *Anchitherium*.

Page 659. As type of *Tayassu* substitute "*T. pecari* Fischer."

INDEX.

[In this index the numbers printed in roman indicate pages on which names occur that are adopted and are used in the headings; numbers printed in italic are those of pages on which names are used as synonyms or are referred to incidentally.]

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THE OCCURRENCE AND DISTRIBUTION OF CORUNDUM IN THE UNITED STATES

BY

JOSEPH HYDE PRATT

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OCCURRENCE AND DISTRIBUTION OF CORUNDUM IN THE UNITED STATES.

By Joseph Hyde Pratt.

INTRODUCTION.

In obtaining data for this paper many corundum localities were visited, especially those that were thought to carry the mineral in commercial quantity. Although all the occurrences of corundum can not be described in detail, they are all mentioned in the tabulated list of localities, page 79.

Considerable activity in corundum mining has sprung up within the last few years, and several new occurrences of corundum in quantity have been brought to light, those of special note being in Ontario, Canada, where the corundum occurs in a syenite, and in North Carolina and Georgia, where it occurs in a gneiss or a quartz-schist.

The corundum localities in the United States are, with the exception of those in Montana, Colorado, and California, limited to the Appalachian region, the mineral having been found at various points throughout nearly its entire length. The mining of corundum has been, however, confined to a narrow section of the southern portion of that region, i. e., to northeastern Georgia and southwestern North Carolina, with the exception of the emery mines at Chester, Mass.

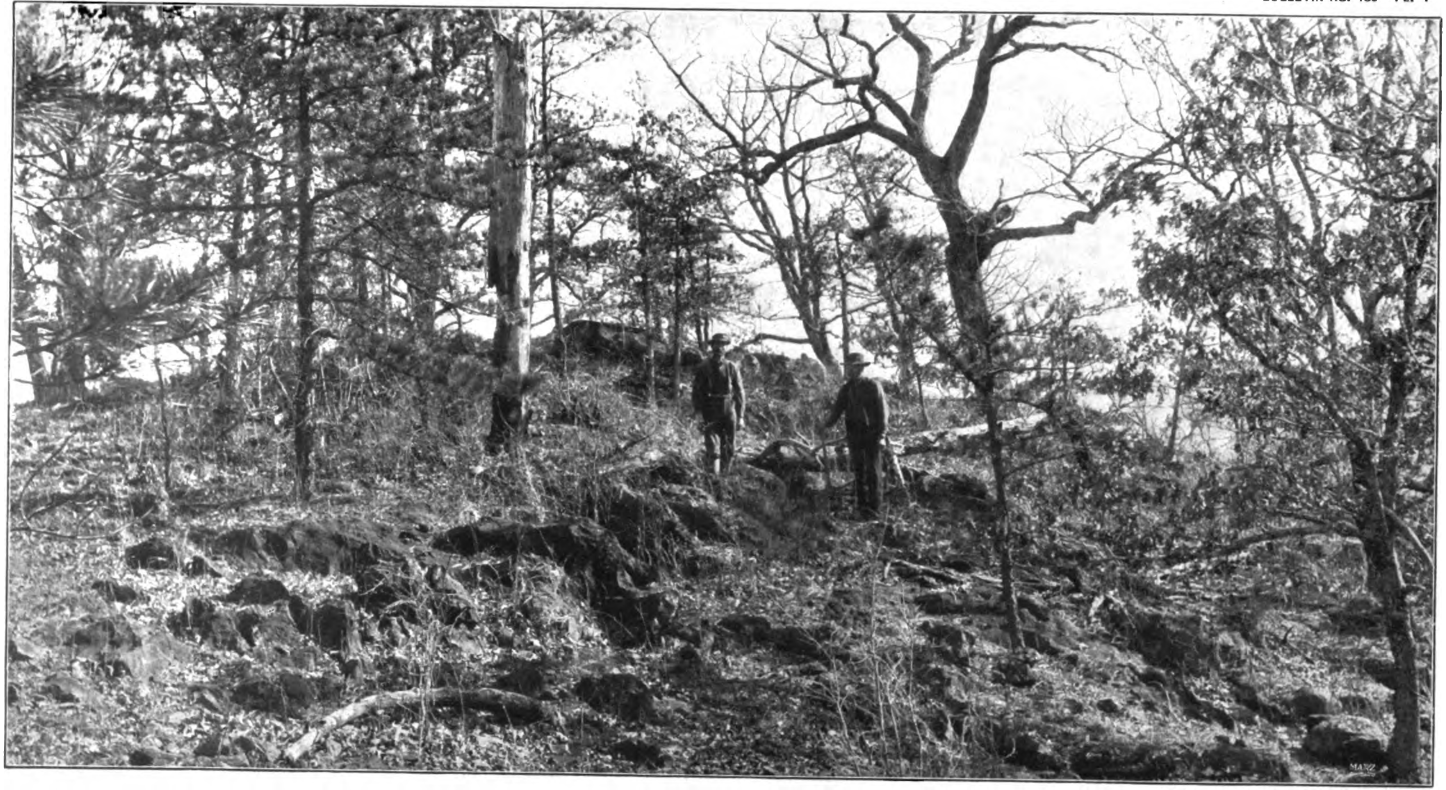
Often a distinction is made between emery and corundum, many persons not recognizing emery as a variety of corundum. There are three names in constant use to designate the varieties of corundum: (1) Sapphire, which includes all corundums, of whatever color, that are transparent to semitransparent; (2) corundum, including the translucent to opaque varieties of all colors; (3) emery, which is a mechanical admixture of corundum and magnetite or hematite. The last two varieties are those used in the arts for abrasive purposes, emery being used in very much larger quantities than corundum. It is of course the presence of corundum in the emery that gives to it its abrasive qualities and makes it of commercial value, and the abrasive efficiency of emeries varies according to the percentage of corundum they contain.

Any corundum that is transparent is included under the head of sapphires, although many of these have distinct names in the gem trade. The blue sapphire is known as the oriental sapphire, the red sapphire as the oriental ruby, the green sapphire as the oriental emerald, the yellow sapphire as the oriental topaz, and the purple sapphire as the oriental amethyst. There are also pink and white sapphires. The corundum gem or sapphire localities are usually distinct from the corundum localities, although very handsome gems have been found where the corundum was mined for abrasive purposes, notably at the Corundum Hill mine, Cullasagee, N. C.

Corundum as it is mined for abrasive purposes occurs as (1) sand, (2) crystal, or (3) gravel and block corundum. Sometimes all three types are found in the same deposit. The sand corundum consists of small grains or fragments of the mineral scattered through the vein. The crystal corundum consists of crystals up to 3 inches in length. Often these crystals have parting planes so thoroughly developed that, in crushing, the corundum breaks up into regular rhombohedrons, this breaking continuing to even the finer sizes and causing the grains of corundum to crumble when in use. This persistent regular breaking of the corundum destroys its cutting efficiency, for it is the irregular fracture that produces the best cutting edge. The block variety often occurs in masses of almost pure corundum from 10 to 1,000 pounds in weight. Again it occurs in large masses intimately associated with hornblende, feldspar, etc., making a rock which is tough and is difficult to work. Frequently the only way to break the masses is to build fires over them and then suddenly cool them by pouring water upon them. The parting planes are at times very noticeable in the block corundum, and are, as in the crystal corundum, detrimental to the commercial product. The parting planes are not lines of cleavage, but are planes developed in the mineral by synthetic twinning, usually parallel to the unit rhombohedron.

It is the hardness of corundum that makes it of so great value as an abrasive. Next to the diamond it is the hardest mineral known, having a hardness of 9, while the diamond has a hardness of 10. Garnet, which is sometimes used as an abrasive, has a hardness of but 7 to 7.5. Corundum varies slightly in hardness; the sapphire varieties are generally considered the hardest, and of these the blue stands at the head. Some corundum has been observed that was readily scratched with a knife, as that from Acworth, Ga. The hardness of a corundum is often misjudged because, when made into a wheel, it does not cut so well as another, when in reality the degree of hardness may be the same in both cases, but the cutting efficiency of one surpasses that of the other.

The theoretical composition of corundum is alumina (Al_2O_3); but with one or two exceptions all corundums that have been examined vary from this by containing a small percentage of other constituents, principally silica (SiO_2), water (H_2O), and ferric oxide (Fe_2O_3). Nearly all corundums contain water, the amount varying from a trace to 2 per cent or more. The amount of silica and ferric oxide varies also, some corundums containing neither of these constituents and some



OUTCROP OF PERIDOTITE AT BUCK CREEK, CLAY COUNTY, N. C.

containing as much as 5 per cent of one or the other. The purest forms of corundum that have been analyzed are the sapphire or gem varieties, which sometimes show over 99.5 per cent of alumina.

All corundums do not behave alike when heated to the high temperature necessary for the manufacture of vitrified wheels. While most corundums can, if properly cleaned, be used in the manufacture of these wheels, some will, when heated, crumble to a powder. It is, therefore, very essential, before beginning to mine a corundum deposit, to thoroughly test the ore and ascertain its adaptability to the manufacture of vitrified and other wheels.

MODES OF OCCURRENCE OF CORUNDUM.

Corundum was formerly regarded as occurring sparingly in nature, and in only a few types of rocks, but it is now known to occur rather widely, and instead of being in quantity in the basic magnesian or peridotite rocks only, it has been found in abundance in syenites, in gneisses, and in schists. Although occurring in many of the crystalline rocks, it has been observed as a rock constituent in only a few of them. In some cases it is an original constituent of the rock, and in other cases it has been formed later, during the process of metamorphism.

In the United States corundum is known to occur in the following rocks: In peridotite (dunite and saxonite), in biotite contact on saxonite, in enstatite, in serpentine, in chlorite-schist, in amphibolite, in norite, in basic minette, in andesite, in syenite, in amphibole-schist, in gneiss, in mica-schist, in limestone, and in cyanite. These modes of occurrence are described below in the order in which they are mentioned.

CORUNDUM IN PERIDOTITES.

Extending from Tallapoosa County in east-central Alabama to Trenton, N. J., there is a narrow belt which contains disconnected outcrops of peridotite rocks; north of New Jersey (in New York, Connecticut, Massachusetts, New Hampshire, and Maine) the outcrops are fewer and do not form a continuous belt. It is in the southern portion of this belt that these rocks have reached their greatest development, in some localities outcropping over an area of several hundred acres. In North Carolina and in the more southern portion of the belt the prevailing type of the rock is dunite, while in the northern portion the secondary rocks, serpentine and talc, are prominent. Pl. I is a reproduction of a photograph of an outcrop of dunite at Buck Creek, Clay County, N. C.

Throughout nearly the entire southern portion of the belt the peridotite rocks show a freshness to almost the surface of the exposures, and there are few localities where there is any considerable area of peridotite entirely altered to serpentine. Under the microscope thin sections of the dunite show an alteration to serpentine between the particles of dunite. These peridotite rocks have been shown to be of igneous origin.[1] The blunt lenticular form in which they are found would be difficult to associate with any origin but that of an intruded igneous mass, which would also account for the apophyses that have been observed extending into the inclosing gneiss. At Webster, Jackson County, N. C., a large block of gneiss is completely inclosed by the peridotites in such a manner as could be attributed only to the intrusion of the latter while in a molten condition. The line of separation of the peridotites and the gneisses is always sharp, and there is no transitional zone from the acid gneiss to the basic peridotite. Under the microscope the latter rock shows the granular structure characteristic of plutonic origin, the grains fitting perfectly into one another without cementing material.

Associated with all these peridotites is the mineral chromite, which occurs as disseminated particles near the borders of the lenticular masses of the peridotites. There is very little carbon found associated with these rocks, and what has been observed is unquestionably of secondary origin.

Until recently the common occurrence of corundum (not including emery), and the occurrence in which the mineral had been found in commercial quantity, was in association with these basic magnesian rocks, peridotites, principally dunite. The country rock that is commonly in contact with the peridotite is a hornblende-gneiss, but these peridotite formations have also been found in contact with a biotite-gneiss and with a mica-schist. Where the country rock is a gneiss it is usually considerably decomposed near the contact, and, while retaining the appearance of the unaltered rock, it readily crumbles to pieces when handled. The peridotite is also more or less altered, the change being usually to serpentine.

The corundum is not an accessory mineral in these peridotites, but is either concentrated near the contact of the peridotite with the other country rocks or in pockets within the peridotite formation. A series of alteration products has been developed in this contact zone, so that the corundum is not found in direct contact with the peridotite, but is separated by intermediate zones of chlorite, enstatite, etc. Chlorite and vermiculite are usually developed between the corundum and the gneiss. For convenience, the occurrences of the corundum in these alteration products between the peridotite and the gneiss are designated contact veins, and those wholly within the peridotite dunite veins.

In a cross section of a contact vein extending from the gneiss to the peridotite (dunite) the following sequence is often observed:

a. Gneiss, hornblendic or micaceous, apparently unaltered.

b. Gneiss with same general appearance as *a*, but so decayed that the particles readily separate from one another.

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[1] Elisha Mitchell Sci. Soc. Jour., Part II, 1895, p. 35, and Am. Jour. Sci., 4th series, Vol. VI, 1898, p. 50.

c. Yellowish vermiculites, varying considerably in thickness, the maximum being 6 to 8 inches; in places absent, so that *b* comes directly in contact with *d*; where present, *c* often merges into *d*.

d. Green chlorite, varying in thickness much like *c*, and in places absent.

e. Chlorite and corundum, sometimes with a little vermiculite. In places this mass may be largely corundum, and it is what is called the "corundum vein," varying in thickness from a few inches to 12 or 15 feet.

f. Green chlorite: so far as observed always present, and varying in width from 1 to 12 inches.

g. Enstatite; in places hard and compact, and in widths of several feet; usually merges into *h*.

h. Talcose rock, usually fibrous, varying in thickness from a few inches to several feet.

j. Dunite, more or less altered, friable, and stained with ferric oxide.

k. Dunite, apparently unaltered, quite extensive.

Between *h* and *j* a seam of yellowish clay (*i*) is sometimes observed which often contains a narrow seam or fragments of chalcedony.

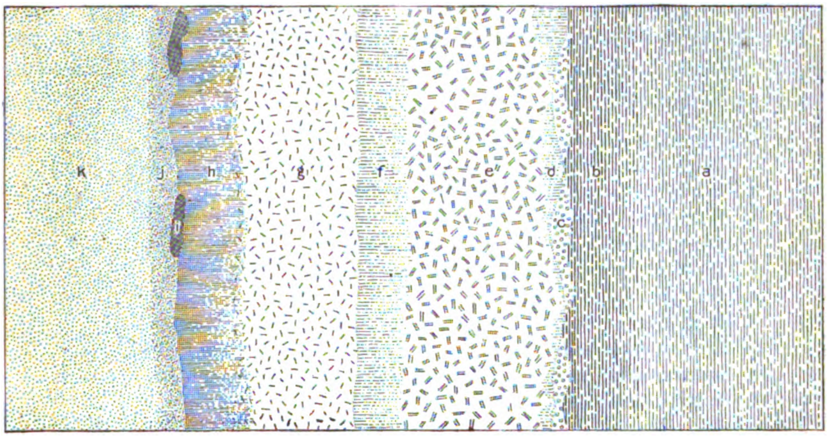

Fig. 1.—Ideal cross section of a corundum contact vein at the Corundum Hill mine, North Carolina. *a*, fresh and unaltered gneiss; *b*, decayed and unaltered gneiss; *c*, vermiculites; *d*, green chlorite; *e*, corundum-bearing zone; *f*, green chlorite; *g*, enstatite; *h*, talcose rock; *i*, clay; *j*, altered dunite; *k*, unaltered dunite.

From what could be learned by actual observation and inquiry among the miners, *c* and *d* are sometimes absent, and when this is the case, *e*, a mixture of chlorite, vermiculite, and corundum, is seemingly in direct contact with *b*. The chlorite, however, on the dunite side of the section is constant. The thickness of the several zones (*a*, *b*, *c*, etc.) in such sections varies greatly at different places, and the distance across the sections may be said to vary at different points, even in the same region, from a few feet to 30 or 40 feet. The accompanying diagram (fig. 1) represents the cross section of a contact vein observed at the Corundum Hill mine, Cullasagee, Macon County, N. C.

In the diagram *a* represents gneiss, apparently fresh and unaltered, passing into *b*, which has somewhat the appearance of the unaltered gneiss, but is so decayed that the particles readily separate from one another; *c* represents a narrow zone of vermiculites that is sometimes entirely lacking; *d*, a green chlorite (clinochlore) partially decomposed and forming the vermiculites of *c*; *e*, the corundum-bearing zone, a mass of the green chlorite with crystals and fragments of corundum disseminated through it; *f*, another zone of the green chlorite; *g*, a mass of grayish, interlocking, crystalline sheaves of enstatite that merge into *h*; *h*, a fibrous talcose rock which passes into *j*; *j*, an altered dunite that is somewhat friable and stained with ferric oxide; *k*, a hard and apparently unaltered dunite. Between *h* and *j* is a mass of soft, yellowish clay (*i*) containing fragments of chalcedony.

The line of contact between the zone of alteration products and the gneiss was very sharp and distinct in all the contact veins examined. The minerals developed between the corundum-bearing zone and the dunite are in great abundance and differ from those between that zone and the gneiss.

In a cross section of a dunite vein at a shaft near the southern part of Corundum Hill, in a distance of from 20 to 25 feet, the following has been observed:

1. Dunite, hard and apparently unaltered.
2. Dunite, somewhat friable and discolored, passing into 3.
3. Talcose rock, fibrous, merging into 4.
4. Enstatite, grayish and somewhat fibrous.
5. Green chlorite, 6 to 15 inches in width.
6. Green chlorite, corundum, and spinel, 6 to 8 feet wide.
7. Chlorite, same as 5.
8. Enstatite, same as 4.
9. Talcose rock, same as 3.
10. Dunite, same as 2.
11. Dunite, same as 1.

The similarity of the two parts of the vein separated by the corundum zone, as already described and as illustrated in fig. 2, is very apparent.

In fig. 2, 1 and 11 represent the apparently unaltered dunite; 2 and 10 represent dunite somewhat friable and stained and passing into 3 and 9—a fibrous talcose rock, often carrying a green actinolite and some green chlorite; 4 and 8 represent a grayish, rather fibrous enstatite rock, which merges into 3 and 9; 5 and 7 represent a green chlorite, which passes into 6—a mass of chlorite, corundum, and spinel.

Although the section just described is a special case, it was observed that all of the dunite veins had the same character on both sides of the corundum-bearing zone. As has been already stated, either a talcose or a serpentine rock may be the limit of the cross section. In one of the dunite veins at Corundum Hill near the west end of the outcrop, the zone of corundum, chlorite, and vermiculites is in direct contact, both on the hanging and on the foot wall, with a serpentine rock. This zone is divided—in one place almost pinched out—by a mass of serpentine.

At all of the corundum localities examined a careful search has been made to find the corundum directly surrounded by the peridotite, but it has been thus observed at only one locality—the Egypt mine, on the western slope of the Sampson Mountains, in Yancey County, N. C. The few specimens obtained were collected by Mr. U. S. Hayes, who developed the corundum property in that section. One specimen shows a prismatic crystal of the corundum surrounded by a granular peridotite (dunite), but with none of the chlorite minerals which usually intervene. The dunite is not quite fresh, but is stained a yellowish brown by iron oxide and is rather friable. On the basal surfaces of the corundum a little muscovite is developed. This has been observed on corundum from other localities.

Spinel has been found at a number of the corundum veins, and in a few cases it is very intimately associated with the corundum. At the Carter mine, near Democrat, Buncombe County, N. C., the corundum is found, in masses of a white and pink color, intergrown with a greenish-black spinel. The masses of corundum and spinel are partially surrounded by a deep-green chlorite, which has also been developed in places between the corundum and the spinel, although this contact of the corundum and the spinel is usually very sharp and distinct. A massive, coarsely to finely granular spinel is found at the Corundum Hill mine, Macon County, N. C., which has disseminated through it small grains and fragments of pink and white corundum.

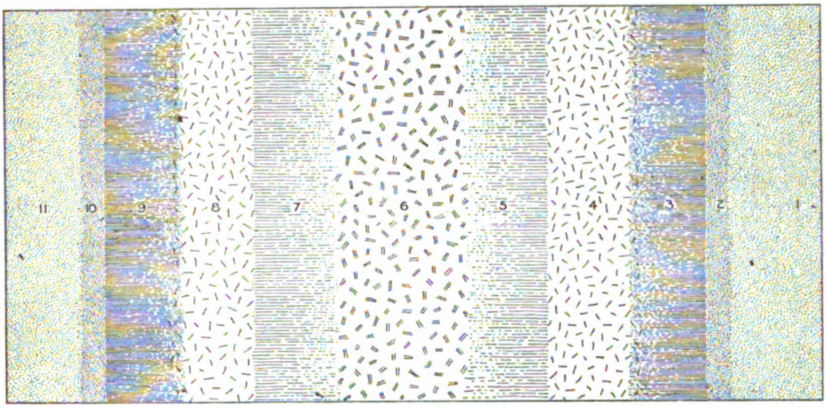

FIG. 2.—Ideal cross section of a corundum-dunite vein at the Corundum Hill mine, Macon County, N. C. 1, hard and unaltered dunite; 2, friable and discolored dunite; 3, talcose rock; 4, enstatite; 5, green chlorite; 6, green chlorite, corundum, and spinel; 7, green chlorite; 8, enstatite; 9, talcose rock; 10, friable and discolored dunite; 11, dunite.

The mineral chromite, which has always been found associated with these peridotite rocks, occurs sparingly in many of the corundum veins. It is a well-observed fact[1] that where there is any quantity of corundum found in the peridotite rocks there is a scarcity of chromite, and where there is a large quantity of chromite there is a scarcity of corundum.

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[1] Am. Inst. Min. Eng., Vol. XXIX, 1899; February meeting.

In a recent paper[1] I have discussed the origin of the corundum in the peridotite rocks, and have accepted the theory that the corundum was held in solution in the molten mass of the peridotite when it was intruded into the country rock, and that as the mass began to cool it was among the first minerals to separate. In these molten magmas the more basic minerals, corundum and spinel, would be the first to separate, and this separation would take place along the outer border of the mass, for there it would first cool. Convection currents would then tend to bring into this outer zone a new supply of material carrying alumina, and when this zone was reached crystallization would take place and the alumina would be deposited as corundum.

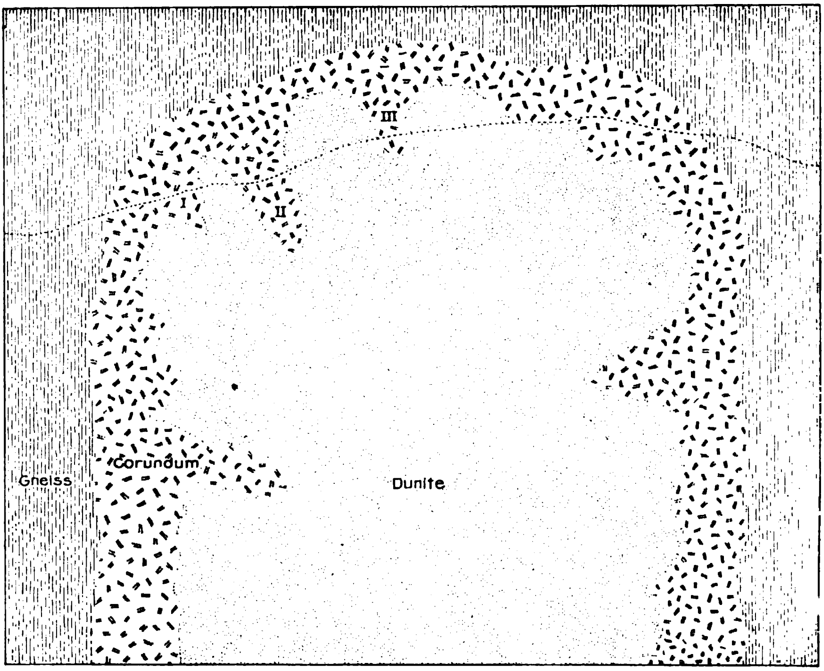

FIG. 3.—Ideal vertical cross section of a mass of peridotite soon after its intrusion in gneiss. The corundum zone is greatly exaggerated.

Fig. 3 represents an ideal appearance of a vertical cross section of a mass of dunite holding corundum in solution, soon after its intrusion into a gneiss. In this figure the corundum zone has been greatly exaggerated, in order to illustrate better the cross section. The corundum would be concentrated toward the borders of the dunite, and would make a sharp and nearly regular contact with the gneiss. The contact with the dunite would be in some places sharp and regular and in other places very irregular, and masses of the corundum would penetrate the dunite. In some cases there would be a somewhat gradual transition from the corundum to the peridotite, as represented in fig. 4. The rapid erosion to which rocks in a mountain region are subjected would readily wear them down to their present condition, represented by the dotted lines in fig. 3.

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[1] Am. Jour. Sci., 4th series, Vol. VI, 1898, p. 49.

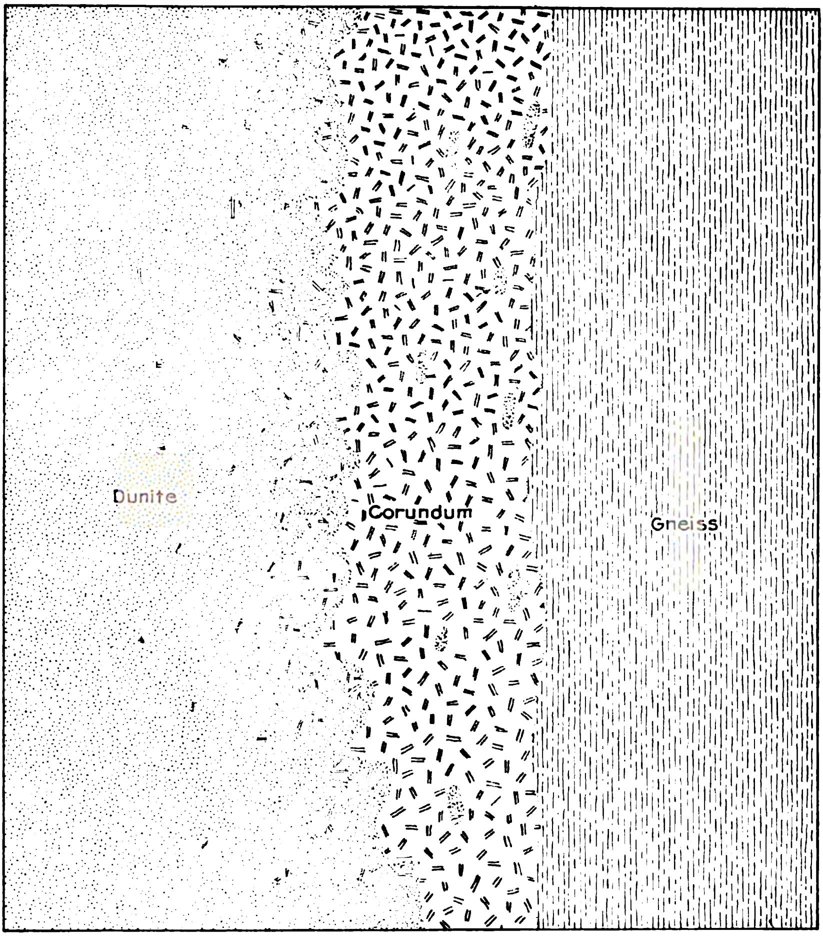

Fig. 4.—Ideal vertical cross section showing a somewhat gradual transition from corundum to peridotite.

The corundum veins, I, II, and III, in fig. 3, which at the present time have no connection with one another, but are each separate and distinct, were at the time of their formation part of the corundum concentrated along the border of the dunite. Some of these veins would soon be worked out, while others might be explored for a hundred or more feet without any apparent change in their width.

The most important observations leading to the adoption of this theory are: The occurrence of the corundum surrounded by granular dunite and also by serpentine; its occurrence with and surrounded by spinel; the sharp contact between the gneiss and the alteration products of the contact vein; the development, on both sides of a corundum vein penetrating dunite, of the same sequence of alteration products, which are almost identical with those on the dunite side of a contact vein; the usual narrowing and pinching of the dunite veins, the trend of which is toward the center of the mass of peridotite, while the contact vein seems to extend down indefinitely.

At a number of the corundum veins in these peridotite rocks, feldspar, which is undoubtedly one of the original minerals of the rock and not a secondary product, is found associated with the corundum. There is a marked difference in the associated minerals when the feldspar is present; the chlorite is not so thoroughly developed, and enstatite is not so common, while margarite is rather abundant and zoisite is not uncommon. These last two minerals are rarely met with free from feldspar in the corundum veins.

The separation of alumina from these peridotite magmas has given rise to some interesting problems, which I have treated in a paper[1] published a short time ago. A summary of the conclusions reached is given here, as they bear directly upon the occurrence of the associated minerals, spinel, chromite, and feldspar, in a corundum vein.

From what has been observed in nature and from the experiments that have been made in the laboratory, it seems that the separation of alumina as corundum from molten magmas is dependent upon the composition of the chemical compounds that are the basis of the magma, upon the oxides that are dissolved with the alumina in the magma, and upon the amount of alumina itself.

1. When the magma is composed of a magnesium silicate without excess of magnesia, all the alumina held by such a magma will separate as corundum.

2. Where there is an excess of magnesia in the magma just described, it will unite with a portion of the alumina to form spinel, and the rest of the alumina will separate as corundum.

3. Where there is chromic oxide present in a magma composed essentially of magnesium silicate (as the peridotite rocks), and only a very little alumina and magnesia are present, these, uniting, separate with chromic oxide to form the mineral chromite, and no corundum or spinel is formed.

4. When peridotite magmas contain, besides the alumina, oxides of the alkalies and alkali earths, as soda, potash, and lime, a portion of

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[1] Am. Jour. Sci., 4th series. Vol. VIII, 1899, p. 227.

the alumina is used in uniting with these oxides and with silica to form feldspar.

5. There is a strong tendency for the alumina to unite with the alkali and the alkali-earth oxides to form double silicates like feldspars, whether such silicates form the chief minerals of the resulting rock or are present in relatively small amount. There is, however, little tendency for the alumina to unite with magnesia to form double silicates when the magma is a magnesium silicate.

CORUNDUM IN BIOTITE, CONTACT ON SAXONITE.

At the asbestos quarry near Pelham, Mass., there is a large lens of the igneous saxonite variety of the peridotite rocks penetrating the acid gneiss of the country. The saxonite is very much altered to a depth of 3 to 12 feet, when the hard nearly fresh rock is encountered, which is of a dull-black color and is made up of grains of olivine and the orthorhombic pyroxene, bronzite. The black color of the rock is due to disseminated particles of chromite and magnetite. Part of the magnetite may be due to the alteration of the grains of olivine, similar to that observed in the dunites of North Carolina, where, at the beginning of its alteration, there is a deposition of magnetite in fine grains, which forms a network of black lines often outlining the grains of olivine.

Professor Emerson has made a petrographical examination of this rock and describes it as follows:[1]

> This is a very fresh mixture of olivine and enstatite, both dusted through with black ore, largely chromite. It is a dull-black rock of very great toughness. The olivine grains have often many crystalline faces. The enstatite is in rare, small plates, with parallel sides and irregular ends, and with a fine wavy lamination, which is often marked by lines of black ore, generally concentrated in some part of the plate, especially the center. Although nearly colorless or pale bronzy in common light, it has marked pleochroism. It is plainly rhombic, and grades into the asbestiform decomposition product in veins running through the section.

None of the anthophyllite that is so abundant in the decomposed portion of the saxonite were observed in the fresh rock.

From the fresh rock to the surface and the contact with the gneiss the saxonite is more or less completely altered, and penetrating through this there is a network of veins of anthophyllite, which are more or less asbestiform. These veins vary in width from very thin seams to 8 inches, with some that are very much wider, from which fibrous masses have been obtained 20 to 30 inches long. It is these veins of fibrous anthophyllite that constitute the asbestos quarry of Pelham.

The saxonite is separated from the gneiss by a band of bronze-colored biotite, usually 4 to 8 inches thick, but in places reaching a thickness of 4 feet. In this wider portion there are nodules or imperfect crystals of corundum of a grayish color mottled with blue.

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[1] Mon. U. S. Geol. Survey Vol. XXIX, p. 52.

These are often wrapped with chlorite. Nodules of a black-green hornblende and an emerald-green actinolite are also found in the biotite. There has been no great quantity of the corundum found.

This zone of biotite is probably the result of contact metamorphism of the saxonite on the gneiss, and the inclosing corundum was formed at the same time. This is similar to the large quantity of corundum occurring in biotite at the contact of saxonite and gneiss at the Bad Creek mine, Sapphire, N. C. (See page 62.)

CORUNDUM IN ENSTATITE.

Enstatite is rather common as a secondary product at many places where the corundum occurs in peridotite, and is thus an associate of corundum at these localities. Occurrences are rare, however, of corundum in an enstatite that is the original rock. Where thus found the rock is made up chiefly of the orthorhombic pyroxene, enstatite, in bladed interlocking crystals of a grayish color. It is always more or less decomposed into talc.

At the Rattlesnake mine, Sapphire, Jackson County, N. C., and on the West Fork of the French Broad River, in Transylvania County, N. C., corundum has been found sparingly in the borders of an enstatite rock.

Enstatite rocks are somewhat common in North Carolina, but accessory minerals in them are rare, and the most common one observed is chromite, in small grains.

CORUNDUM IN SERPENTINE.

At a number of peridotite localities in North Carolina and Georgia crystals and fragments of corundum have been found that were surrounded by serpentine, but nowhere in this southern section of the peridotite belt has corundum been found associated with the larger masses of serpentine. In Chester and Delaware counties, Pa.,[1] there is a long belt of serpentine rocks, part of which, at least, have been derived from peridotite rocks, and in connection with these, in the eastern part of Chester County and the western part of Delaware County, corundum has been found. In this, as in the peridotite, the corundum occurs near the contact of the country rock. Considerable plagioclase feldspar is associated with the corundum in the vein in a manner somewhat similar to the occurrence of this mineral at the Cullakeenee mine, Buck Creek, Clay County, N. C. In the South corundum has not been found as constantly associated with the serpentines as it is with the peridotites, but chromite is found very abundantly with many of them.

Cutting through the serpentines on the eastern slope of Spanish Peak, Plumas County, Cal., are white, coarse-grained dikes composed of corundum and oligoclase.

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[1] Geol. Survey Pennsylvania, C^4, 1883, p. 351.

CORUNDUM IN CHLORITE-SCHIST.

Besides being associated with chlorites in the peridotites just described, corundum is found in the long belts of chlorite-schist that traverse the country 10 or 12 miles southeast of Webster, Jackson County, N. C. These chlorite rocks, which sometimes attain a width of several hundred feet, are traceable for miles across the country. Almost the only constituent of these rocks is a green scaly chlorite, though sometimes there are present small grains of feldspar, and occasionally needles of amphibole. The chlorite is in small scales, never very coarse, as is sometimes the case in the zones about the peridotite, and often these are so minute as to give the rock a very compact appearance.

In one of these belts, on Caney Fork of Tuckasegee River, Jackson County, N. C., corundum is disseminated through the chlorite in small rounded masses, ranging in thickness from an inch to minute grains, and there the chlorite is not so compact as elsewhere. The corundum is usually wrapped with a white coating of mica, which is a secondary mineral derived from the corundum. The mica is often in radiating scales perpendicular to the outer surface of the corundum, and while in some cases it is very thin, in other cases it has replaced nearly all of the corundum, leaving but a grain of that mineral in the center.

CORUNDUM IN AMPHIBOLITE.

The occurrence of corundum in amphibolite is important, as the large deposits of emery corundum at Chester, Mass., are found in this rock. Under the head of amphibolite are included all those rocks that are composed entirely or chiefly of amphiboles. These rocks occur rather widely, including, as they do, those of Massachusetts, Georgia, and North Carolina, but with the exception of those that contain the emery they have not, up to the present time, been important in the production of corundum.

Associated with the peridotite rocks of Clay County, N. C., and the adjoining Towns County, Ga., are dikes of amphibolite, which are, for the most part, between the peridotite and the gneiss, although in some places they cut directly across the peridotite formation, but close to the contact of that rock with the gneiss. These dikes vary in width from 25 to over 300 feet, their average width being from 75 to 100 feet. The relation of these amphibolite dikes to the peridotite formation at Buck Creek, Clay County, N. C., is shown in fig. 5.

The groundmass of this amphibolite is a grass-green amphibole, containing 17 per cent of alumina, nearly 12 per cent of lime, and one-half of 1 per cent of magnesia, which is best classified under the edenite variety of aluminous amphiboles. The rich green color of the edenite is undoubtedly due to the presence of a small amount of chromic oxide, the analysis showing the presence of 0.38 per cent of this oxide. Many microscopic grains of picotite or chromite are scattered through the groundmass of the edenite. There is also present, in widely varying proportions, the plagioclase feldspar anorthite. The feldspar is not constant in all of the amphibolites, and where it does occur it varies in size from minute particles to masses as large as a pea.

The rock has often a very strikingly laminated structure, and grades from that to one which shows no lamination at all. It is exceedingly tough and very fine grained. The corundum, which occurs in the amphibolite as an accessory mineral, varies in size from minute particles to masses several inches in diameter, in which there are usually developed parting planes parallel to the unit rhombohedron. In color it varies from almost white to a deep ruby red, but the prevailing color is a deep pink.

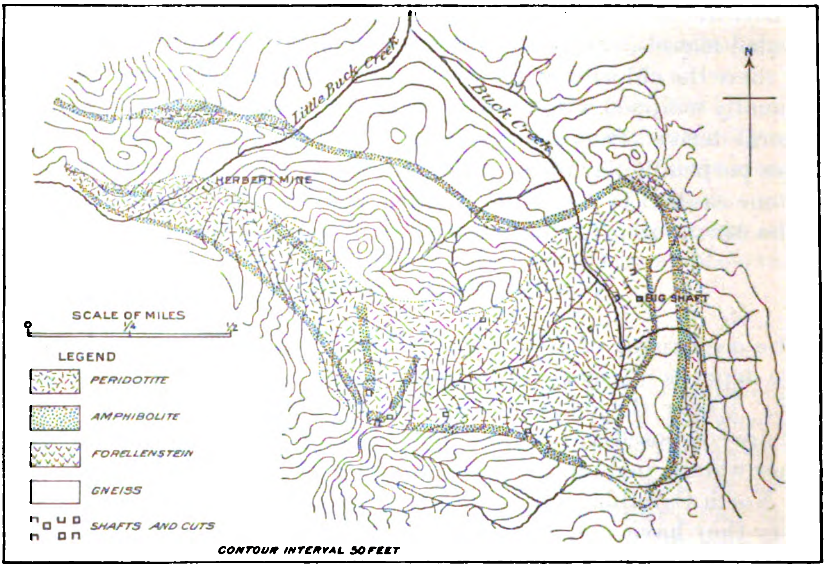

FIG. 5.—Map of the Buck Creek peridotite area, showing the relation of the amphibolite dikes.

On account of the exceeding toughness of the rock, and more particularly on account of the low percentage of corundum, these amphibolites are not of commercial value as a source of corundum; they do, however, make handsome mineral specimens.

On the eastern slope of the Blue Ridge, in the vicinity of Statesville, Iredell County, N. C., corundum has been found associated with an amphibolite composed of a dark-green hornblende. On account of the thickness of the soil and the depth to which these rocks have been decomposed, there are few places where the fresh rocks are exposed, and little is known of their extent. At Hunters, 7 miles west of Statesville, the amphibolite was exposed during

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[1] Bull. Geol. Survey North Carolina No. 11, 1896, p. 59.

exploration for corundum, which, according to Lewis,[1] was found to occur in fine brown vermiculite, developed in zones along the borders of and penetrating the amphibolite, and varying in thickness from a few inches to 3 or 4 feet. Fig. 6 is an ideal illustration of the occurrence of corundum in the amphibolite at Hunters. In this figure, *a* represents a feldspar vein that is sometimes encountered in the midst of the vermiculites, *b;* the feldspar is more or less altered to kaolin, and often bears corundum, although most of it was found in the vermiculite zones. *b* represents the vermiculite zones carrying the corundum, which is in crystals and in rounded masses of crystals clustered together. Margarite sometimes accompanies it, and large masses made up almost entirely of these two minerals have been found on the surface in this region. *c* represents radiating borders of actinolite that inclose large masses of what was once amphibolite, but which is now nothing but a mass of ocherous clay, bearing occasional needles of hornblende and scales of vermiculite. The outer portions, *d*, are dark-green amphibolite.

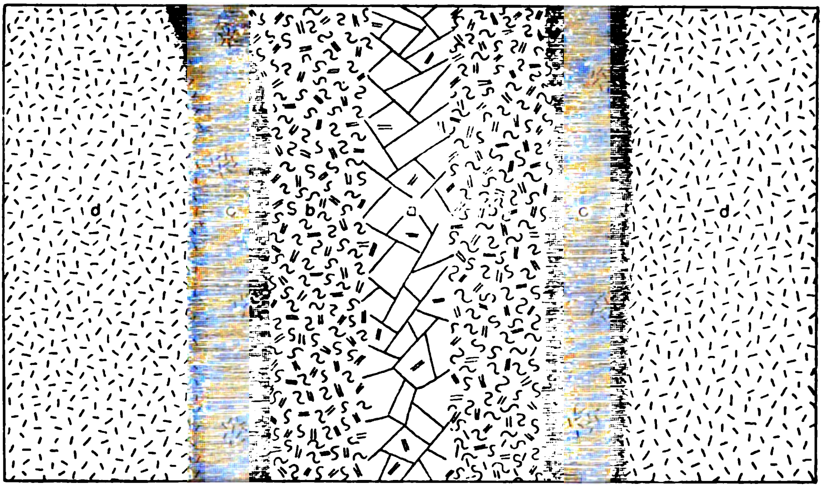

FIG. 6.—Ideal vertical cross section of corundum in amphibolite at Hunters, Iredell County, N. C.

CORUNDUM (EMERY) IN AMPHIBOLITE AT CHESTER, MASS.

The most widely known occurrence of corundum in amphibolite is that of the emery at Chester, Mass., an elaborate description of which is given by Prof. B. K. Emerson[1] in his exhaustive work on the geology of old Hampshire County, Mass.

Extending almost continuously across the State, north and south of Chester, there is a band of amphibolite that is conformable throughout its entire extent with the sericitic schists of this section of the

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[1] Mon. U. S. Geol. Survey Vol. XXIX, 1898.

State. The strike of this band of amphibolite is dependent upon the windings of the schists, and its dip is approximately 90°. Its width will average only a few rods, but in the vicinity of Chester, a few miles both north and south of the town, it is three-quarters of a mile wide, and it is in connection with this broad band that the emery is found. It occurs on the eastern side of the amphibolite and is separated from the sericitic schists by a narrow band of amphibolite, varying in width from an inch or two to nearly 18 feet. Sometimes there has been considerable serpentinization of the amphibolite, and the emery is separated from the schists by serpentine. Across the Westfield River from the point where the emery is first encountered, the amphibolite is replaced by serpentine, and it is in this bed of serpentine that crystals of this mineral, pseudomorphous after olivine, are said to occur, specimens of these being in the geological collection at Amherst College.

The amphibolite is in appearance a finely laminated rock made up of interrupted thin sheets of feldspar grains and of jet-black needles of hornblende, and usually contains more or less green epidote.

The sericitic schists on the west of the amphibolite, which are described by Professor Emerson under the head of the "Rowe schist,"[1] are biotitic and feldspathic, and often contain garnets that are more or less altered to chlorite. The schists on the east are described as the "Savoy schist,"[2] and are chloritic sericite-schists, mostly of a light-gray color, with a shade of green, due to the chlorite that is mixed with the muscovite. When the chlorite can not be seen with the eye it is readily detected under the microscope. In some places the proportion of the chlorite has increased until there are considerable aggregations of this mineral along the planes of lamination. Garnet and pyrite are also abundant in certain portions of the schist.

The emery vein can be followed for a distance of nearly 5 miles, starting from the point where it is first encountered, at the north end of the broad band of amphibolite, on the left bank of the Westfield River, just above the railroad bridge of the Boston and Albany Railroad. The general strike of the vein is a little east of south and runs for the most part parallel to the line of contact of the amphibolite and schist. Emery is not found throughout the vein, but can be almost continuously followed by means of streaks of chlorite. The vein varies in width from a few feet to 10 or 12 feet, the average width of the emery being about 6 feet. Upon both sides of the emery there are usually developed thin seams of chlorite varying from 1 inch to 6 inches or more in width. During the early history of the mine a seam of feldspar was encountered, about 12 inches wide, lying to the east of the emery and bordered on both sides by chlorite 3 or 4 inches wide. There is also more or less chlorite developed in the mass of the ore body, which varies from some portions that are an almost pure magnetite to others where there is an intimate admixture of magnetite and corundum. At the Sackett mine (described on page 68) the corundum, of a bronze color and luster, is coarsely crystallized, giving the ore a porphyritic appearance. Sometimes the corundum has crystallized out in blue and white crystals and in masses of a pound or two in weight.

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[1] Mon. U. S. Geol. Survey Vol. XXIX, 1898, p. 76.

[2] Ibid., p. 156.

ORIGIN OF THE EMERY.

It is a perplexing question to decide from the examination of this and the surrounding rocks whether the amphibolite is of sedimentary or igneous origin, for there are many indications that point to one and to the other. It is not improbable that some portions of this band of amphibolite, which extends across the State, may have been formed in one way and other portions in the other. Professor Emerson has examined this belt of rocks for practically its entire distance across the State, and while he is inclined to consider this band of amphibolite of sedimentary origin, he does not, if I understand him correctly, see anything antagonistic to the view that at least a portion of this amphibolite is an intrusive igneous rock. I have examined only that portion of the amphibolite adjacent to the emery vein, and from my observations I had come to the conclusion that this part of the amphibolite band was an igneous rock that had been intruded into the schists along their line of weakness, and that the magnetite and emery had been the first minerals to separate out from this magma. The reasons that have led me to this conclusion are given briefly below.

The position of the amphibolite, with a dip of practically 90°, lying between the Rowe and Savoy schists, which would have been a line of least resistance, suggests an igneous origin. What seems to me opposed to the acceptance of a sedimentary origin for this broad band of amphibolite is the separation of the vein of emery and magnetite from the sericitic schist on the east by a band of the amphibolite varying in width from a few feet to 18 feet, which, as far as can be judged superficially, is identical in every way with the amphibolite on the west of the vein. Yet, if the amphibolite and emery are of igneous origin, it would naturally be expected that emery would occur on the west side of the amphibolite, but none has been found there, although it is not certain that it does not occur.

Only a small amount of carbonates has been found in connection with the amphibolite and emery—no more than could readily be accounted for as secondary minerals.

Then, again, chromite has been found in connection with the serpentine that is associated with the amphibolite, some of which is undoubtedly an alteration of this rock. The presence of the chromite in the serpentine is to me a very good indication of its igneous origin, and its being the alteration product of a basic magnesian rock. This, then, would indicate the existence of former masses of a basic magnesian rock which have been changed into serpentine, the serpentinization continuing into the amphibolite for some distance.

The emery is not continuous along the strike of the vein, but occurs in a series of pockets in the vein that dip about 30° to the north. In going from one pocket to another along the strike there is often nothing to indicate the vein but a small seam of chlorite. The pockets are almost continuous in the direction of the so-called dip and hold this dip very constantly.

It seems to me that this portion of the amphibolite band was an igneous mass intruded after the formation of the sericitic schists, and either after or at the time these schists were tilted to their present position, and that the emery bed is the result of the differentiation of components of the mass that were held in solution by the igneous magma.

The theory that Professor Emerson[1] proposes is also probable, viz:

> That the emery-magnetite vein was originally a deposit of limonite which was formed by the replacement of limestone and into which alumina was carried by infiltrating solutions and deposited as allophane and gibbsite. The subsequent metamorphism of the bed, although it may well have been intimately connected with the extremely violent mechanical forces to which the strata have been subjected, was largely completed before these forces had ceased their activity, as is shown by the jointing and brecciation of the magnetite and emery. * * * The less altered ferruginous limestone below was changed into the epidotic amphibolite.

Many points that can be noticed support this conclusion, but these also indicate an igneous origin for the amphibolite. No fresh peridotite rocks have been observed in this section, and the nearest are probably across the Connecticut River at Pelham, where an igneous mass of saxonite is encountered. The presence, however, of chromite in the serpentine associated with this amphibolite is to me very good evidence for believing that the serpentines have an igneous origin, and it is very probable that they are alterations of former masses of an intruded peridotite.

If any deep mining is undertaken on the emery, new evidence may be brought to light that will determine decidedly what may have been the origin of these amphibolites and emery deposits.

CORUNDUM IN NORITE.

In the vicinity of Peekskill, Westchester County, N. Y., corundum has been found associated with norites, which have been described by G. H. Williams.[2] These rocks belong to the Cortland series, of which the prevailing rock type is one that is characterized by the presence of the mineral hypersthene. But though this mineral is there so abundant, a normal norite, containing nothing but a plagioclase feldspar and hypersthene, is extremely rare. There is more or less biotite, hornblende, or augite developed in nearly all rocks of this class, so that there is a gradual transition from normal norite to mica-diorite, hornblende-diorite, and gabbro. The intermediate varieties are much more common than the extremes, and they have been classified by Williams according to the prevailing nonfeldspathic mineral. Where hypersthene prevails the rocks are grouped as norites, being subdivided into normal norite, horneblende-norite, mica-norite, and augite-norite, according to the presence of these different minerals in the rock. These so grade into each other that no sharp line can be drawn between them.

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[1] Mon. U. S. Geol. Survey Vol. XXIX. p. 145.

[2] Am. Jour. Sci., 3d series, Vol. XXXIII, 1887, pp. 135, 191.

Associated with the norites, 3 and 4 miles southeast of Peekskill, N. Y., are deposits of magnetite and emery. It is not at all unlikely that these veins are the products of the differentiation of the molten norite magma, by which the basic portion of the magma has been concentrated near its outer surface, a gradual transition occurring toward the center to the more acid norite. This occurrence would be similar to that of the pyrrhotites which have separated out from the norites of Norway, as described by Vogt.[1] In that case the pyrrhotite was concentrated toward the border of the norite, and there is at some places a gradual transition from the pure pyrrhotite through a pyrrhotite-norite to the pure norite, while at others there is a sharp contact between them. The deposits of magnetite and emery are not in a continuous vein, but are more like segregated masses. Attempts have been made to work these for both iron and emery, but as iron-ore deposits they were soon abandoned. They are still being worked to a certain extent for emery by the Jackson Mills Company, of Easton, Pa.; the Tanite Company, of Stroudsburg, Pa.; and H. M. Quinn, of Philadelphia, Pa. An examination of the emery ore by J. D. Dana[2] and G. H. Williams,[3] has shown that the corundum component is often scattered rather sparingly through the ore, and what had formerly been supposed to be green chlorite was found to be the iron-magnesian spinel, pleonaste. The corundum in the emery varies from small, colorless grains to crystals 7 mm. in diameter, which show a hexagonal outline. In other parts of the emery the corundum grains are larger and of a bluish color.

The pleonaste, which is so commonly associated with the emery, has been found at the Cruger iron mine, in the eastern part of the township, as veins in a nearly normal norite, into which it passes by gradual transitions. The most compact specimens of the ore at this mine are found to contain the various mineral components of the norite, i. e., hypersthene feldspar, biotite, and garnet, no corundum having been observed here.

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[1] Zeitschr. für Prakt. Geol., Nos. 1, 4, and 7, 1893.

[2] Am. Jour. Sci., 3d series, Vol. XX, 1880, p. 199.

[3] Idem, Vol. XXXIII, 1887, p. 194.

This gradual transition of the pleonaste and iron ore into the normal norite and the occurrence of the norite minerals in the compact ore are strong evidence that these ore bodies were formed by the differentiation of the molten norite magma.

In the vicinity of these norites there are small masses of peridotite, but no corundum has been found associated with them.

CORUNDUM IN BASIC MINETTE.

Near the entrance of Yogo Gulch, in Fergus County, Mont., two parallel dikes of igneous rock have been observed cutting through the limestones. These dikes are about 800 feet apart, and can be followed for over a mile in a nearly east-west course. Their general width is from 6 to 20 feet, but they are occasionally 75 feet wide. They are much decomposed near the surface, but in working them for the sapphires which they contain the nearly unaltered rock has been encountered.

The rock has a dark-gray, decided basic appearance, and is very tough, breaking with an uneven fracture. Scattered through it are light-green and white fragments, which are by far the most conspicuous of any of the mineral components of the rock. These are a pyroxene that is more or less decomposed and calcite. Some of these white fragments are probably the barium carbonate witherite, for in the concentrates obtained from washing the decomposed portions of the dike a considerable quantity of this mineral was found. Numberless crystals of pyrite, not over a millimeter in diameter and almost perfect trapezohedrons, were also found in these concentrates. A few scattered tablets of biotite, from 2 to 3 mm. in diameter, were observed. The sapphire variety of corundum is found rather sparingly in this rock in well-formed, flat, tabular crystals, some of which are half an inch in diameter.

Professor Pirsson, of the Sheffield Scientific School, has made a petrographical examination of this rock, and describes it as follows:[1]

> In the section the rock at once shows its character as a dark. basic lamprophyre, consisting mainly of biotite and pyroxene. There is a little iron ore present, but its amount is small and much less than is usually seen in rocks of this class. The biotite is strongly pleochroic, varying between an almost colorless and a strong, clear, brown tint. It occurs in ragged masses, rarely showing crystal outline, and it contains a large amount of small apatite crystals. The pyroxene is of a pale-green tint, with the habit of diopside, and is filled with many inclusions, now altered, but probably originally of glass; in some crystals these inclusions are so abundant as to render the mineral quite spongy. The grains sometimes show crystal form, but are mostly anhedral and vary in size, though the evidence is not sufficient to show two distinct generations.
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> These two minerals lie closely crowded together, and no feldspars are seen in the rock. The interstices between them consist of a small amount of a clouded, brownish, kaolin-like aggregate, which appears to represent some former feldspathoid

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[1] Am. Jour. Sci., 4th series, Vol. IV, 1897, p. 421.

component, possibly leucite, perhaps analcite. * * * Some calcite in agglomerated granules is also seen in the section.

This calcite does not appear to be of secondary origin, and is probably due to fragments of limestone that were picked up as the igneous mass forced its way up through the limestones and were converted into calcite.

As has been indicated by Professor Pirsson[1] in his paper, the amount of biotite in this rock shows that it is closely related to the minettes, and although it is lacking in feldspar it has the biotite and pyroxene of these rocks. It is a more basic type of these and is also similar to the shonkinites from the Highwood Mountains, Montana, described by Weed and Pirsson.[2]

The sapphires, which are all of some shade of blue, occur but rarely in the rock, and from their sharp, distinct crystals and their general distribution it is very evident that they have crystallized out of the molten magma at the time of its intrusion, similarly to crystals of feldspar in porphyry. The alumina of the sapphires was not an original constituent of the magma, but, as has been shown by Pirsson,[3] was due to inclusions of clay sediments taken up from the strata through which it passed. The Belt formation, consisting of clay shales of great but unknown thickness, undoubtedly underlies the limestones, and the included fragments of these shales were the source of the alumina of the sapphires. These included fragments would be dissolved by the molten magma and thus form local areas that would be very rich in alumina. As the magma began to cool corundum crystals would separate out in these alumina-rich areas.

CORUNDUM IN ANDESITE.

The occurrence of corundum in andesite in the United States was first described by Kunz.[4] He described a dike of andesite at Ruby Bar, near Eldorado Bar, on the Missouri River, 12 miles northeast of Helena, Mont. As described by him, this rock is in a dike cutting the slates of the country and is a vesicular mica-augite-andesite, which is made up of a groundmass of feldspar microlite and a brownish glass, in which are many particles of biotite and crystals of augite.

A similar occurrence has been observed by myself on the river 6 miles above Eldorado Bar, at French Bar, which is nearly 12 miles due east of Helena. At this locality a narrow dike, 3 to 6 feet wide, was found cutting through the slates of this section. The trend of the dike is N. 5° to 10° E., and it dips about 45° E. It was encountered by miners who were working the gravels of the bar for sapphires, and it has been exposed at but one point, so that its extent is not known.

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[1] Am. Jour. Sci., 4th series, Vol. IV, 1897, p. 422.

[2] Idem, Vol. I, 1895, p. 467.

[3] Idem, Vol. IV, 1897, p. 423.

[4] Idem, Vol. IV, 1897, p. 418; Min. Mag., Vol. IX, 1891, p. 396; Seventeenth, Eighteenth, Nineteenth, Twentieth Ann. Repts. U. S. Geol. Survey.

The rock is fine grained, of a rather light-gray color, and a decided basic appearance. Biotite is the most conspicuous mineral and occurs in small, flat, tabular plates, sometimes with distinct crystal outline, and up to a millimeter or two in diameter. In some specimens of the rock there are nodules, 5 to 10 mm. in diameter, that appear to be partially decomposed feldspar. The augite, which is prominent in the thin section, is not very apparent in the hand specimen.

Prof. L. V. Pirsson, of Yale University, has kindly examined thin sections of this rock for me and says that the rock is an altered augite-mica-syenite. It contains unaltered phenocrysts of a clear brown biotite which are well crystallized and which sometimes show slight resorption. It also contains phenocrysts of augite of a pale-brown color, variable in size, the largest 2 mm. across, replaced in the majority of cases by pseudomorphs of calcite. Besides this pseudomorphous calcite there is also a considerable amount of this mineral in irregular masses or streaks, which may in part be the filling of steam pores and in part be pseudomorphous after hornblende; this, however, could not be definitely determined. The minerals just mentioned are embedded in a groundmass of a brown glass which is everywhere speckled and dotted with microlites of a lath-shaped plagioclase feldspar. These are small and somewhat altered, so that their determination is not entirely satisfactory, but they appear to be oligoclase.

The rock is thus porphyritic, and the structure of the groundmass is typical for the hyalopilitic structure of Rosenbusch. In many respects it closely resembles the augite-porphyrite of Weiselberg, weiselbergite.[1]

One feature that is brought out in the thin sections is the somewhat laminated character of the rock in one direction, while in the slide cut at right angles to this a well-characterized flow structure is observed, all the longer axes of the minerals pointing in one direction. This indicates movements of flowing lava after the components had formed.

The corundum crystals occur very sparingly in the rock, and those that were observed were not so sharp and distinct as the blue sapphires.

I could obtain no definite information regarding the location of Ruby Bar and no one of the bars is now called by that name. It is possible that the bar described by Kunz is the same as the one now known as French Bar. From the description given of Ruby Bar, it is apparently not so far up the river as French Bar.

CORUNDUM IN SYENITE.

On a high foothill between Gallatin and Madison rivers, in Gallatin County, Mont., corundum has been found in a rock that is composed essentially of orthoclase feldspar, corundum, and biotite, with the feldspar predominating. This would classify the rock as a corundum-bearing biotite-syenite. The rock, for the most part, has a somewhat gneissoid structure, and in these portions the corundum is more or less finely divided, being in fine grains and small crystals. In other portions, where the corundum is coarsely crystallized, the rock has something of a pegmatitic character, and the corundum is surrounded by the orthoclase. The crystals of corundum vary in size; the largest ones are 1½ inches long and from a quarter to a half an inch in diameter. They are fairly well developed in the prismatic zone, but many of them, especially the larger ones, are rounded. In color they vary from bluish gray to almost colorless. The percentage of the corundum in the rock is large, and from a superficial examination it could be compared to the percentage of quartz in an average granite. The biotite is in small tablets, without definite crystal outline, and the tablets are often so arranged as to give the mass of the rock its gneissic appearance. The orthoclase did not show any crystal outline even in the larger fragments.

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[1] Rosenbusch, Mass. Gest., 3d ed., p. 953.

This occurrence of corundum was discovered by Prof. F. W. Traphagen, of Bozeman, Mont., to whom I am indebted for the specimens.

From the appearance of the hand specimens, this occurrence of corundum is similar to that in the syenite of Ontario, Canada, recently described by Blue[1] and Miller.[2]

CORUNDUM IN AMPHIBOLE-SCHIST.

At the Sheffield mine, in Cowee Township, Macon County, N. C., corundum has been mined in a saprolitic rock at various times for a number of years. In a shaft sunk to determine the depth of the corundum-bearing saprolite, solid, unaltered rock was encountered. The shaft, which was 87 feet deep, passed through the following rocks: The first 12 feet (*a*) was through the saprolite, in which there were seams of kaolin; the next 2 feet (*b*) were corundum bearing. From 14 to 28 feet (*c*) the same saprolite was encountered; the next 2 feet (*d*) were corundum bearing, followed by 10 feet (*e*, 30 to 40 feet) of the saprolite, and 2 more feet (*f*) that were corundum bearing. From 42 to 63 feet (*g*) the rock began to be less decomposed, and from 63 to 66 feet (*h*) another seam of corundum-bearing rock was encountered. From this point to the bottom of the shaft the rock became more and more solid, until at 77 feet (*i*) the fresh rock was encountered. These various seams in the rock are very pronounced. They dip 30° toward the west near the top, but become nearly horizontal near the bottom of the shaft. The seams of decomposed feldspar observed in *a* become less and less kaolinized, until in *i* the seams are of pure plagioclase feldspar. In *i* there are two seams of corundum similar to *b*, *d*, and *f*, although in the fresh rock the corundum seams are not as pronounced as in the saprolitic rock. There is often a considerable amount of feldspar bordering the seams of the corundum. The general trend of the rock is about N. 5° to 10° E.

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[1] Trans. Am. Inst. Min. Eng., Vol. XXVIII, 1898, p. 565, and Rept. Bureau of Mines, Ontario, Vol. VIII, Part II, 1899, p. 240.

[2] Rept. Bureau of Mines, Ontario, Vol. VII, Part III, 1898, p. 238, and Vol. VIII, Part II, 1899, p. 205.

From what could be seen of the solid and the saprolitic rocks, it is evident that the corundum occurs at intervals in the rock in seams a few feet in width. While the corundum may comprise 10 per cent or more of these veins, the amount in the rock that it would be necessary to mine would probably not be over a few per cent. The actual width of the dike is not known, but the saprolitic rock has been cut across for about 100 feet in a direction nearly at right angles to its strike.

The fresh rock at the bottom of the shaft is somewhat varied in appearance, and while it does not show any definite gneissoid structure, it sometimes closely resembles it. There are streaks in the rock a few inches thick, the more finely divided portions of which are distinctly gneissoid.

Some portions of the rock are decidedly porphyritic, and contain phenocrysts of a light-gray amphibole, a centimeter in diameter, in a groundmass of feldspar. A large part of the rock is made up, however, of small, roughly outlined prismatic crystals of an amphibole, probably hornblende, and irregular fragments of plagioclase feldspar. The hornblende is almost black in color, but in thin splinters it has a bronze luster and a deep resinous color. Biotite of a deep-brown color occurs sparingly, and a pink garnet is rather abundant. This part of the rock has a gneissoid structure and contains the corundum. The corundum is of a light to a purplish-pink color and occurs in nodules up to 2 or 3 cm. in diameter. Some streaks in the rock are highly garnetiferous, composed essentially of the garnet and plagioclase feldspar or of garnet and biotite. Chalcopyrite occurs very sparingly in these portions of the rock. Small particles of graphite have been observed in the coarsely crystallized portions.

Professor Pirsson has kindly made a microscopical examination of this rock, the results of which are embodied in the following paragraphs:

> In thin section the microscope disclosed the minerals hornblende, plagioclase feldspar, garnet, biotite, muscovite, staurolite, and rutile. Hornblende is the most common, forming about two-fifths of the section, while of the remainder plagioclase and garnet occur in about equal quantities and the others in comparatively insignificant amounts.
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> The hornblende is formless, but tends to irregular columns, almost invariably extended in the plane of schistosity. It has very rarely a somewhat stringy tendency in its cleavage, but is usually homogeneous in broad plates. Its color is a clear olive brown, and it is somewhat pleochroic, but not strongly so. It is every-

where dotted by the small grains of garnet, which rarely show good crystal form. The garnet occurs associated also with the plagioclase.

The plagioclase occurs twinned according to the albite law only. In sections perpendicular to 010 the lamellæ show extinction as great as 30°, and the plagioclase is therefore rich in lime and as basic as labradorite, which it probably is. It shows strong evidence of shearing movement in the rock; it is often broken, exhibits rolling extinction, and the albite lamellæ are curved and bent. It runs along the planes of schistosity between the feldspars and forms a mosaic of angular broken grains.

Staurolite was found in rather broad, irregular grains, and rutile in small, irregular grains and well-crystallized prisms.

Professor Pirsson has indicated that the character and structure of this rock, composed chiefly of amphibole, labradorite, and garnet, suggest most strongly that it is a metamorphosed igneous rock of the gabbroid family. During metamorphism the augite of the gabbro would be converted into the brown hornblende; any iron ore that was present would be taken up by the hornblende and garnet. The rutile would have resulted from the titanic acid that is a regular component of the iron ores in these gabbro or diabase rocks. Staurolite is a mineral that would be rather naturally expected, as it is usually a mineral of metamorphism, and its natural home is in the schistose rocks. The feldspar has suffered the least (except the corundum) chemically, and shows only the shearing of dynamic processes.

The corundum does not occur in crystals, but in small fragments and in elongated nodules, which are cracked and seamed and appear to have been drawn out by the shearing processes. The general character and shape of the fragments of corundum would indicate that they were original constituents of the igneous rock and were not formed during its metamorphism.

The exact classification of this rock is not easy, but it is probably an amphibole-schist.

CORUNDUM IN GNEISS.

Corundum has been found in North Carolina in the ordinary gneiss of the same belt of crystalline rocks in which the peridotites occur. A number of occurrences, part of which may be corundum in gneiss, are described under the head of mica-schist; some of the rock that was at first thought to be a gneiss is now known to be a quartz-schist.

In the eastern part of Clay County, N. C., on the southern slope of Gross Ridge of the Chunky Gal Mountains, just above Thumping Creek, corundum has been found in the gneiss at a number of points. The rocks are so covered with soil and decomposed rock that the exact relation of the corundum-bearing gneiss to the normal gneiss can not be determined, but from what can be seen the former appears to be in narrow bands cutting through the latter. In structure the gneiss is distinctly laminated and very fine grained, except the portions immediately surrounding the corundum, where its constituents are much more coarsely crystallized, especially the biotite. It is a hornblende-gneiss, showing but little mica except where associated with the corundum.

The corundum occurs in nodules and crystals, half an inch and smaller in diameter, sometimes wrapped with muscovite in a manner similar to that described for the corundum in the chlorite-schists (p. 21). The crystals are prismatic, with the length of the prism usually two or three times its diameter. Occasionally they are very flat, with the prism not over a quarter of an inch in length and half an inch in diameter, and from their appearance these crystals are known locally as "button" corundum.

This occurrence of corundum in gneiss is in no way associated with the peridotite rocks of this section of the country. It is, however, very similar to the occurrence of corundum in quartz-schist described below. None of the peridotite rocks in which the corundum is so commonly found in this section of North Carolina have been found associated with these bands of gneiss.

CORUNDUM IN MICA-SCHIST.

It has recently been observed that portions or bands of the crystalline rocks of the southwestern part of North Carolina and the northeastern part of Georgia are corundum bearing. The composition of these rocks varies from those that are a normal gneiss to those that contain no feldspar and can best be described as quartz-schist composed of biotite, mica, and quartz. Some portions of the rock are rich in garnet, others are almost entirely free from this mineral, and occasionally there are also small bands of white quartzite. The rocks are distinctly laminated and are frequently intersected by granitic dikes, some of which are coarsely crystallized and of a pegmatitic character. These dikes are often parallel with the bedding of the schists, although many of them cut irregularly through them. Where these dikes are parallel to the bedding of the schists, the laminated structure of the latter is much more apparent. The general strike of these crystalline rocks is about northeast to southwest and the dip is about 30° NW.

Portions or bands of these schists are corundum bearing, but they are irregularly defined and gradually merge into the normal rock. They have a similar relation to the normal schists as the garnet-bearing bands of a gneiss to the normal gneiss in which they occur. These bands are not veins in any sense of the word, but are simply portions of the same mass of crystalline rocks in which corundum occurs as a constituent of the rock. They vary in width from a foot or two to 12 or 15 feet, but in these wider ones the corundum-bearing portion is not continuous and is intercepted by streaks of barren rock and granitic dikes. The bands can be traced for a distance of 5 or 6 miles in a northeast-southwest direction, sometimes outcropping continuously for nearly a mile. There are at least two of these corundum-bearing bands which are parallel to each other and about 2 miles apart. The only variation that has been observed in them is in the percentage of corundum and garnet; otherwise they are identical. The amount of corundum is never large, and from determinations made on samples from various parts of the deposits it will not average over 4 or 5 per cent.

The corundum occurs for the most part in small particles and fragments that have no regular shape and are of a gray, white, and bluish-white color or almost colorless. It is also in crystals which vary in size from some that are very minute to some that are 2½ inches long and about one-half inch in diameter, and which are usually fairly well developed in the prism zone.

It is probable that these schists are the result of the metamorphism of sandstones and shales formed from alluvial deposits many thousand feet in thickness that were once the bed of the ocean. By lateral compression these have been folded and raised into the mountain ranges of this region. That these have been much higher than at the present time is very evident from the granitic dikes, which are of deep-seated origin. By decomposition and erosion the mountains have been worn down to their present condition, thus exposing the schists in contact with the granitic dikes which have aided in their thorough metamorphism. The shales were rich in alumina, and during their metamorphism the excess of the alumina crystallized as corundum along the planes of lamination, so that during the subsequent weathering the corundum has been left in knotty nodules, studding the surface of the rock and giving it the appearance of containing a high percentage of the mineral.

Genth[1] has described an occurrence of corundum in Patrick County, Va., about 2 miles from Stuart, where it has been found in the mica-schists on a knob of Bull Mountain. These schists are talcose and chloritic in character and are intersected by a number of granitic dikes. The portions of the schists in which the corundum occurs are gneissoid in character. This occurrence is decidedly different from that in Clay County, N. C., and more like the corundum-bearing schists near the headwaters of Caney Fork of Tuckasegee River, in Jackson County. The schists are in rather narrow bands that can be followed for some distance across the county. They are not true chlorite-schists like those described on page 21, but are made up largely of an elastic mica (probably muscovite) with some chlorite. The corundum occurs in rough crystals and nodules up to 1 inch in length and half an inch in diameter, of a grayish-white to white color and colorless. It is readily cleaned, and tests made upon the cleaned product show that it is well adapted for the manufacture of the vitrified wheel.

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[1] Am. Jour. Sci., 3d series, Vol. XXXIX, 1890, p. 47.

CORUNDUM IN LIMESTONE.[1]

Extending from Byram, Sussex County, N. J., to Warwick Township, New York, a distance of about 25 miles, there is a belt of limestone having a general northeast-southwest strike, which widens out toward its northern end. About 1828 a specimen of sapphire corundum was found at Franklin Furnace in a detached piece of rock composed essentially of feldspar, and although search was made no more specimens were found in this vicinity. A few years later sapphire corundum was found in Newton Township, about 6 miles from Franklin Furnace, embedded in a feldspar and partly surrounded by a carbonate. This occurs near the contact of the limestone with the granitic rocks of this section, and it is very evidently the result of contact metamorphism. Dana reports the occurrence of sapphire corundum in these limestones near Newton and Vernon, Sussex County, N. J., and near Amity, Orange County, and Crugers Station, Westchester County, N. Y.

Prof. W. P. Blake[2] has described the occurrence of red sapphire corundum in the white crystalline limestones in Vernon Township, Sussex County, N. J. The finest specimens were ruby red in color and the others were of various shades of purple. The crystals were translucent, but no transparent ones were observed. They were embedded in the limestone and it is not improbable that crystals may occur in the similar rocks of the adjoining counties of New York.

The New Jersey occurrences seem to be well authenticated, but those from New York are not. In the report of the New York State Museum for 1895 on the mineral resources of the State there is no mention of the occurrence of corundum at this locality, and in the report for 1898 it is stated that no sapphire corundum is found in the State.

CORUNDUM IN CYANITE.

The occurrences of corundum associated with cyanite are quite widespread, and at times there are large masses of cyanite in which are numerous hexagonal crystals of corundum. At Litchfield, Conn.,[3] a mass of cyanite containing crystals of a dark, grayish-blue corundum, which was said to have weighed 1,500 pounds, was found. Large masses of cyanite have been found at various points in North Carolina in which there were well-developed crystals of corundum.

All the occurrences that have been noted have been from surface specimens, and the rocks in the vicinity have always been either schists or gneisses. It is without doubt in connection with these rocks that the cyanite and corundum originated. I do not believe that the cyanite is usually an alteration product of the corundum, as has been suggested by Genth,[1] but that they were both formed during the metamorphism of the rocks from which the schists and gneisses have been derived.

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[1] Am. Jour. Sci., 1st series, Vol. XXI, 1832, p. 319.

[2] Idem, 2d series, Vol. XIII, 1852, p. 116.

[3] Idem, 1st series, Vol. VI, 1823, p. 219.

SUMMARY OF CORUNDUM OCCURRENCES.

From the facts presented in the preceding pages, the occurrences of corundum are seen to be of much greater variety than was formerly supposed. While the large concentrated masses are still confined to the basic magnesian rocks, corundum is scattered in small amounts through a number of other rocks, and in the aggregate is in very large quantity.

Of the igneous magmas there are two that are very distinct from each other and that can be designated as the lime-magnesia and the alkaline series. In the first the mineral components of the rock are free from alumina, and where there has been alumina in solution in the molten magma it has all separated out either as corundum or spinel. In the second series, however, it is only the excess of alumina that has separated out as corundum, by far the larger percentage having united with the alkaline oxides to form a feldspar. In all the occurrences that have been examined this phenomenon has been constant.

It is very evident that there are magmas that contain an excess of alumina just as there are magmas with an excesss of silica, and it is evident that the alumina separates out as corundum in the same manner that silica separates as quartz in granitic rocks.

DISTRIBUTION OF CORUNDUM.

Most of the corundum that has been mined for abrasive purposes has been obtained from the eastern part of the United States, and has been found associated with the long belt of basic magnesian rocks extending from Massachusetts to Alabama. It is in the southern portion of this belt, in North Carolina and Georgia, that these rocks have their greatest extent, and it is in this region that the greatest quantity of corundum has been found. During the past few years, however, North Carolina is the only State that has produced any corundum and Massachusetts and New York the only ones that have produced any emery.

While the production of corundum has been limited almost entirely to one locality in North Carolina, it is not because this is the only known deposit of this mineral in quantity, but because the better deposits have not been worked. The emery deposit that has proved of the most economic importance, and which has produced practically all the emery mined in the United States, is at Chester, Mass. The amount of corundum that has been mined during the past year is very much less than the amount of emery, although its market value is twice that of the emery and there is a large demand for a well-cleaned commercial product. There are a number of reasons for this condition: the better deposits have been so controlled and tied up that they could not be worked, an imperfectly cleaned product has been put on the market, and other minerals have been substituted for this one.

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[1] Am. Philos. Soc., Vol. XIII, 1873, p. 22.

It is still too soon to predict to what extent recent discoveries of corundum in Canada and India will add to its production. Some of the Canadian deposits in Ontario were granted by the government to the Canada Corundum Company, Limited, of Toronto, and this company began extensive operations on the deposits at the beginning of 1900. This corundum, which occurs in a syenite similar to that described on page 30, has been thoroughly tested and has given fairly satisfactory results. The reports of the bureau of mines at Toronto show that this ore carries 14.7 per cent of corundum and that a very clean product is obtained. If the ore from this extensive Canadian bed continues to carry so large a percentage of the mineral, can be readily cleaned, and shows good abrasive qualities, this deposit should play an important part in the world's production of corundum (see page 88).

The India corundum occurs at Pipra, South Rewah. It is pink in color, with a fine-grained massive structure, and very tough. It is reported that there is an unlimited supply of this material, and it has already been used in this country in the manufacture of certain oilstones (see page 89).

In the following descriptions of localities those that contain sapphires are first taken up, then the corundum, and last the emery.

SAPPHIRE OR CORUNDUM GEMS.

The properties of a mineral that determine its rank as a gem are hardness, color, rarity, index of refraction, and luster. As an illustration of the extent to which the hardness affects the value of a mineral for gem purposes, sphalerite might be cited. This mineral, which has an index of refraction and a luster not far below that of the diamond, has a hardness of only 3.5 to 4, which effectually cuts it off from being a gem mineral.

Corundum has properties that place some of its varieties among the most valuable gems. With the exception of the diamond, it is the hardest mineral known, and the rarity and color of the ruby, the red corundum, has made that gem, when more than a carat in weight, more valuable than a diamond of corresponding weight. Corundum has been found in almost all the colors of the rainbow, and in the following list its gems have been classified according to color. They are very often designated by the prefix "oriental," to distinguish them from gems of the same name whose mineral composition and character are entirely different.

Sapphire or corundum gems.

Oriental or true ruby	Red of various shades.
Oriental sapphire	Blue of various shades.
Pink sapphire	Rose or pink.
White sapphire	Colorless.
Diamond spar	
Opaline	Pale blue or bluish white.
Girasol	
Hyaline	
Oriental amethyst	Purple.
Oriental emerald	Green.
Oriental topaz	Yellow.
Star sapphire	Opalescent.
Chatoyant	
Asteria	

The gems occur in the mines in three forms: First, as crystals, of which there are two distinct forms, (1) hexagonal prisms terminated by rhombohedrons and pyramids, sometimes with basal plane, the larger crystals being often rounded or barrel-shaped, and (2) flat, tabular crystals, where the basal plane is very largely developed; second, as transparent colored portions of larger massive pieces of corundum; third, as nodules of finer and clearer material in a mass of cleavable corundum, often having the appearance of rolled pebbles when separated from the mass of corundum.

ORIENTAL RUBY.

The most important of the sapphire gems is the oriental ruby, which varies from rose, pinkish, dark-red, and purplish to pigeon-blood color, the most highly prized. The rubies are very likely to be flawed, and when examined many of the cut stones are found to contain flaws of one character or another. The stones are often so cut that these flaws are distinguishable only by the aid of a magnifying glass.

The finest rubies of pigeon-blood color are those found in the Mogok district, about 90 miles north-northeast of Mandalay, in upper Burma. Small but fine rubies, often, however, of a pink color or a purplish tint, are found at Ratnapoora, in Ceylon, and of a dark-red color, similar to that of a garnet, in Siam. The rubies of the Burma district are found in situ in limestones, but the mining is confined almost entirely to the gravels.

At the Corundum Hill mine, Cullasagee, N. C. (see description, page 55), various shades of gem ruby corundum have been found. Two of the best rubies of good color that have ever been found at this mine are in the collection of Clarence S. Bement, of Philadelphia; there are also a number of fine ones in the United States National Museum at Washington. Many of the smaller crystals of various shades of pink to red are transparent near the outer surface and near their extremities, and from these small gems can be cut, but few that are worth $100 have been obtained from them. These smaller crystals are usually well developed and have a clean-cut form. The faces commonly developed on these are the base, c, 0001; the unit prism, m, $10\bar{1}0$; the unit rhombohedron, r, $10\bar{1}1$, and the pyramid, n, $22\bar{4}3$, more rarely observed.

The North Carolina locality for corundum gems which at the present time is attracting the most attention is the tract of land between the Caler Fork of Cowee Creek and Mason Branch, tributaries of the Little Tennessee River.[1] This tract is situated in Macon County, almost 6 miles below (north of) the town of Franklin. The nearest railroad station is Dillsboro, Jackson County, on the Southern Railway, about 12 miles to the east. The bottom of the valleys are about 2,500 feet above sea level, and the mountain peaks or knobs in the immediate vicinity rise to a height of 3,000 or 3,500 feet.

In the gravels of Caler Fork Valley pieces of crystals of red corundum were picked up by the people of the district, which led to the driving of two or three tunnels with the expectation of striking the vein and finding the corundum in sufficient quantity for commercial purposes. Work in this direction was soon abandoned, and for a number of years there were only prospecting and a little mining for the red corundum for gem purposes.

Systematic search was made, which revealed the fact that ruby corundum was to be found in the gravels of Caler Fork Valley for a distance of 3 miles. In 1895 the American Prospecting and Mining Company, of New York, bought out the old claims and began work on a systematic basis. The property owned by the company is a large tract on both sides of Caler Fork of Cowee Creek and nearly all the land in the northern part of the watershed of Mason Branch, a total area of about 5,000 acres.

The gravels in which most of the rubies have been found are covered by soil averaging about 2 feet in depth, but varying from 1 to 5, and they are about 3 feet higher than the present alluvial gravel of the stream. Pl. II, *A*, is a view of one of the gravel beds that is being worked for rubies, just west of the company's office. The gravel in this part of the valley, which is overlain with 3 to 5 feet of soil, is composed of waterworn masses of quartz and small pebbles of gneiss and quartz, and is much cleaner in appearance than the gravels a mile farther up the creek, at In Situ Hill, where most of the mining was carried on during 1898. Fifty feet above the level of this gravel another bed was discovered at In Situ Hill which carried ruby corundum.

In washing these gravels for the rubies, hydraulic processes have been used very similar to those used in the West in washing gold-bearing gravels. All the soil, as well as the gravel, is washed into a short line of sluice boxes (*a* of Pl. II, *B*) which lead into a large sieve

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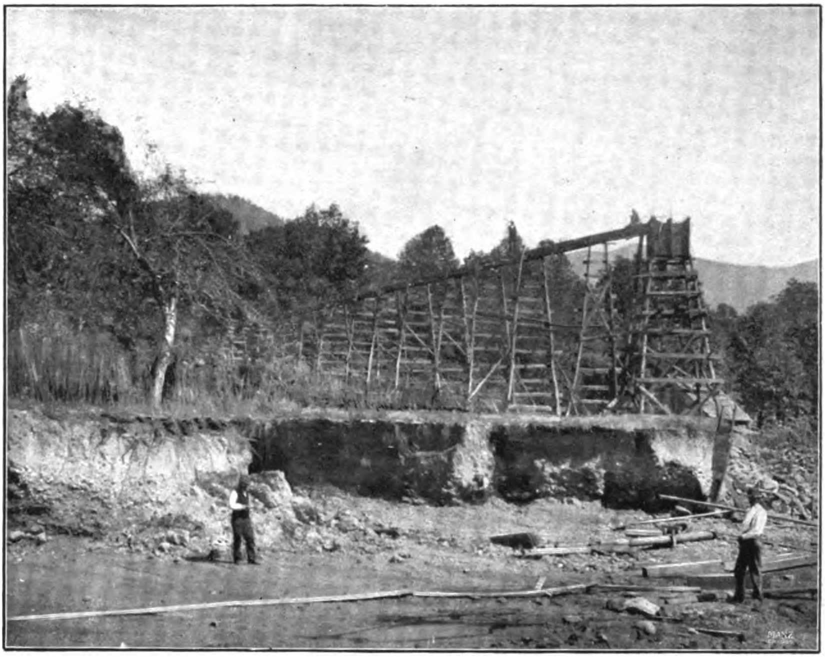
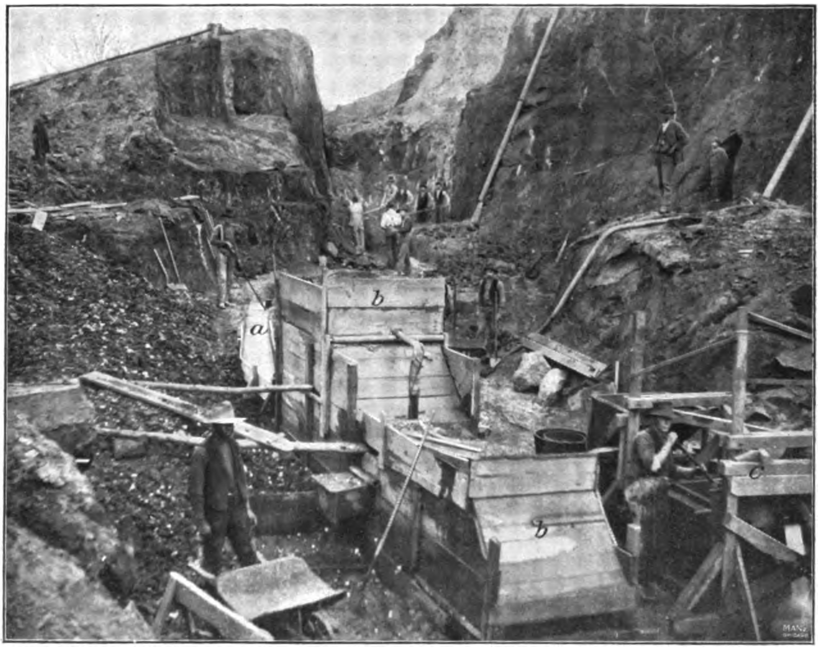
[1] Am. Jour. Sci., 4th series, Vol. VIII, 1899, p. 370.



A BED OF RUBY-BEARING GRAVEL AT CALER FORK, COWEE VALLEY, MACON COUNTY, N. C.



RUBY MINE AT COWEE VALLEY, N. C.

Plant for washing the gravels is shown in the foreground; *a*, sluice box; *b*, sieve boxes; *c*, rocker.

box (*b* of Pl. II, *B*), where the large pieces of rock and bowlders are removed and most of the dirt and fine gravel is washed out. They are then shoveled into a rocker (*c* of Pl. II, *B*), where they are further cleaned and concentrated, the final concentration of the rubies being done by hand.

No basic magnesian rocks or serpentine derived from them, in which most of the corundum of North Carolina occurs, have been found in this valley. Corundum Hill and the Ellijay corundum region are, however, less than 10 miles to the south.

Although, in many respects, the occurrence of the rubies and their associate minerals in the Cowee Valley is similar to the occurrence of the ruby in Burma, no limestone has been found near the alluvial deposits, the nearest point at which limestone has been found being at Cullowee Gap, about 8 miles to the southeast.

The country rock of the district is a gneiss, of a gray, fine-grained variety, which has a great many small garnets disseminated through it. The rock for the most part is in a highly decomposed condition, but there are small exposures of the undecomposed rock in many places. The gravels in which the rubies are found rest on a soft rock known as saprolite, which is the result of weathering of the basic silicate rocks in place. By means of shafts and the workings at the gravel washings it has been shown that at a depth of 35 feet or more these saprolitic rocks contain fragments of the undecomposed rock and pass into such rocks as eclogite-amphibolite and a hornblendic gneiss.

A narrow dike of hornblendic eclogite a few feet in width is exposed near the present workings of the company and can be traced for about 100 yards.

No rubies have been found in the undecomposed rock, but at In Situ Hill small rubies of a rather pale color were found in a narrow band of saprolitic rock. This band was, however, cut off by slickenslides so that it could not be followed in any direction. There are four parallel slickenslides that have been exposed at one place in the workings, the general direction of the slides being N. 75° E. Some of these are 70 feet in length and of unknown depth. It is very evident that there has been a great deal of disturbance in this immediate vicinity through the breaking of the rock masses by faulting, the ready influx of water having caused the reduction of the rocks to their saprolitic condition.

In washing the gravels and masses of saprolite, masses of undecomposed rock have been uncovered, and in the center of these nodules of the pure hornblende rock have been found. The saprolite bordering these nodules often contains particles and crystals of corundum.

Less than 2 miles to the east of In Situ Hill, beyond Betts Gap of the Cowee Mountains, corundum of a gray to bluish color, but highly crystallized, has been found in hornblende-gneiss. One mile a little north of west, at the Sheffield mine, pink corundum has been found in amphibole-schist (see pages 31 and 58).

An association of corundum peculiar to this locality is with the garnet, rhodolite. Corundum and garnet occur not only constantly together in the saprolitic material and in the gravels, but corundum crystals have been found that bear the impression of the garnet. By means of wax a mold was taken of these impressions, and they were shown to be either the dodecahedron or trapezohedron. Then again some of the ruby crystals when broken are seen to have a garnet inclosed, and the garnet can often be seen in the transparent ruby crystal and the cut gem.

As has been said, there is no limestone in this immediate vicinity, and these rubies were probably derived from an amphibolite or eclogite. The usual flat tabular form of the crystals is one that seems to be characteristic of the gem corundum when found in igneous rock.

The Cowee Creek rubies frequently contain inclusions, some of which are very minute, known to jewelers as "silk," and these give rise to a cloudiness or sheen in the polished gem. Rutile and menaccanite often occur in the rubies and greatly mar their beauty and value. Some gems that were 3 or 4 carats in weight have been cut, which were free from inclusions, of fine color, and transparent. A great many smaller ones have been cut that are perfect gems. In color and brilliancy these gems are equal to the Burma ruby, and if the percentage of the unflawed transparent material increases but little this new field will be a worthy rival to the Burma field.

A considerable percentage of the transparent material is often very badly flawed by cracks due to parting, and by the inclusions of rutile or menaccanite, so that the percentage of perfect stone from this mine is small. This, however, is true of the rubies from the Burma field, for a large proportion of the rubies on the market to-day are usually more or less flawed with the parting cracks.

The pleochroism exhibited by the Cowee rubies is very marked, some of them being a very rich pigeon-blood red in the direction of the vertical axis—that is, looking down upon the basal plane—and changing to an almost pinkish-white color when viewed at right angles to this or looking through the prism. The pleochroism which nearly all the deep-colored varieties of corundum gems exhibit is one of the means of identifying a corundum gem; this often interferes with the cutting.

The ruby crystals[1] from the Cowee Valley show a very wide variation in their development. Although many of the crystals are so striated that no crystallographic measurements were possible on the reflecting goniometer, the faces were readily identified by means of the contact goniometer. On some of the crystals the faces were bright

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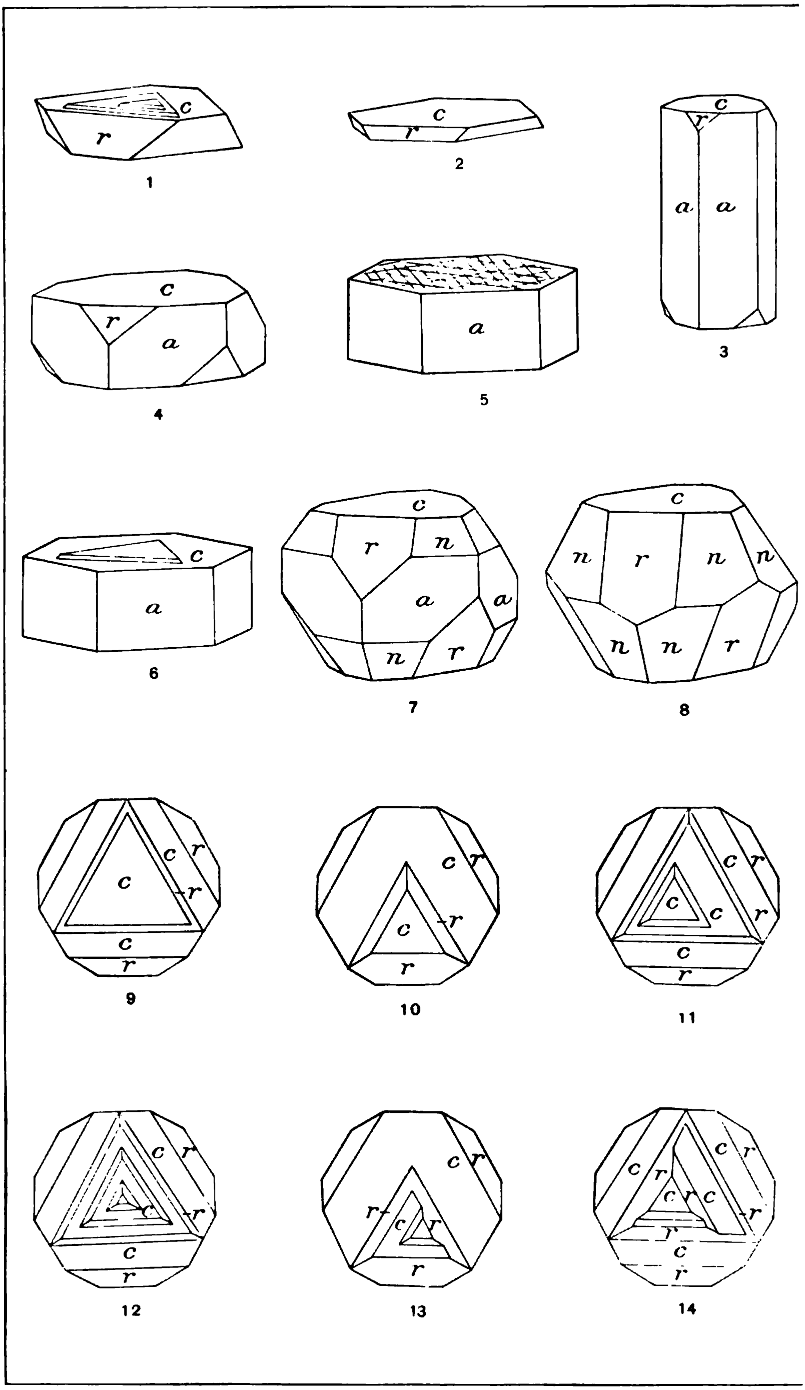
[1] Am. Jour. Sci., 4th series, Vol. VIII, 1899, p. 379.



RUBY CRYSTALS FROM COWEE VALLEY, MACON COUNTY, N. C.

and smooth, making them well adapted for measurement on the reflecting goniometer. These crystals are shown on Pl. III.

In the crystals examined two common habits were noticed; one is shown in figs. 1 and 2 of Pl. III, and is a combination of the base *c* (0001) and the unit rhombohedron *r* $(10\bar{1}1)$; the other is represented by figs. 3–6 of Pl. III, where the prism *a* $(11\bar{2}0)$ is very prominently developed. The rhombohedral crystals vary from those in which the base and the rhombohedron are disproportionately developed, the base having a diameter of 12 mm. and the rhombohedron of only 1.5 mm., to some (fig. 1 of Pl. III) in which the base and the rhombohedron are nearer one size. The majority of these crystals have, however, the base more largely developed, thus giving the crystals a flat, tabular appearance. This rhombohedral development is very similar to the sapphires from Yogo Gulch, Montana, described on page 52.[1]

On some of the prismatic crystals the prism reaches a length of nearly 15 mm. in the direction of the *c* axis, and has the rhombohedron *r* but slightly developed (fig. 3 of Pl. III), while on others the prism is very short and the rhombohedron is sometimes wanting, as represented in figs. 4 and 5 of Pl. III.

Another habit of these crystals is shown in figs. 7 and 8 of Pl. III, where the pyramid *n* $(22\bar{4}3)$ is well developed. This face was identified by means of the contact goniometer, the measured angles approximating closely to those calculated. The usual form of these crystals is shown in fig. 7 of Pl. III, where the faces *c* (0001), *a* $(11\bar{2}0)$, *r* $(10\bar{1}1)$, and *n* $(22\bar{4}3)$ are nearly equally developed. On some of the crystals the prism is very prominent, being 8 mm. in length in the direction of the *c* axis, while the pyramid is only 1.5 mm.; on others the pyramid is only very slightly developed. A few crystals were examined which showed only the presence of the base, the rhombohedron, and the pyramid, as represented in fig. 8 of Pl. III. The crystals, measuring up to 7 mm. in diameter, were doubly terminated and nearly perfect in their development.

The crystals represented by fig. 7 of Pl. III are similar to those described by Bauer[2] from the Burma district, and are almost identical in form with the sapphire crystals figured by me, from Emerald Bar, Canyon Ferry, Meagher County, Mont. (p. 50).

Although both the basal and rhombohedron planes are very often striated, it is only on the basal planes that the striations are sharp and distinct and can be measured. The striations are parallel to the three intersections of the base *c* and the rhombohedron *r* as shown in fig. 5 of Pl. III.

A very common development that was noticed on nearly all the flat rhombohedral crystals and on many of the prismatic crystals is a repeated growth on the basal plane of the rhombohedron *r* (10$\bar{1}$1) and the base *c* (0001), as represented in figs. 1–6 of Pl. III.

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[1] Also Am. Jour. Sci., 4th series, Vol. IV, 1897, p. 424.

[2] Neues Jahrbuch für Min., Geol., und Pal., Vol. XI, 1896, p. 209.

To illustrate better the variation in these growths, a series of drawings, figs. 9–14 of Pl. III, have been made in basal projection. In figs. 9 and 10 of Pl. III, which represent the more common development of these repeated growths, there is but one secondary rhombohedron and base, which sometimes has one of its rhombohedron faces a continuation of one of the rhombohedron faces of the crystal. Figs. 11 and 12 of Pl. III represent the repeated growths, the faces of which are separate and distinct from one another and from the faces of the main crystal. In the crystals represented by fig. 12 of Pl. III, the basal plane of the crystal has the appearance of being striated with triangular markings when the secondary growths are but slightly developed. In figs. 13 and 14 of Pl. III is represented a series of growths where a number of the rhombohedron faces coincide.

Some of the pyramidal crystals (figs. 7 and 8 of Pl. III) also show the development of the secondary growth of rhombohedron and base. The thickness of the rhombohedron of the secondary growth varies greatly: some are so thin that they appear like striations; some are 2 mm. in thickness. A few crystals were observed on which there was a secondary growth parallel to the prism 11$\bar{2}$0. This same style of development has been described by Bauer[1] as occurring in the Burma rubies.

The sapphire crystals from Montana, described on page 53, are strikingly similar in this respect to the Cowee rubies. Among the most noticeable associated minerals of these Cowee rubies is a delicate rose-colored garnet of great brilliancy, to which the name rhodolite[2] has been given. The rhodolite usually occurs in waterworn pebbles, but it has been found in very small dodecahedrons, and its close connection with the rubies in the small crystals of rhodolite inclosed by the garnet has already been mentioned.

The other accompanying minerals are: Quartz, rarely as pseudomorphous dodecahedrons; corundum crystals, of pale-blue, amethystine, and pink shades; spinel (pleonaste); gahnite, in octahedral crystals; chromite (rare); rutile; menaccanite; bronzite (transparent); tremolite; hornblende; iolite (colorless); cyanite; fibrolite; staurolite in perfectly transparent fragments of a garnet-red color; monazite in small crystals; zircon, small, brilliant crystals, and also the variety cyrtolite; pyrite; chalcopyrite; pyrrhotite; sphalerite; sperrylite in minute crystals; and gold.

Much of the work that has been done in Cowee Valley has been in the nature of prospecting to locate the extent of the ruby-bearing gravel and if possible to locate the origin of the rubies themselves. No work was done in the valley during the past year, but it is stated upon good authority that work will be begun again in the coming spring.

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[1] Loc. cit., p. 209.

[2] Am. Jour. Sci., 4th series, Vol. V, 1898, p. 294.

At the Mincey mine, Ellijay Creek, ruby corundum has been found from which several small stones could be cut. This occurs at the same locality as the bronze corundum, described below.

Another locality that is worthy of mention, and one that gives some promise of making a satisfactory showing in course of development, is the so-called gem mine on the property of Dr. C. Grimshawe, of Montvale, Jackson County, N. C. Rubies of good color, from which a number of fine but very small stones have been cut, have been found in the gravels of the stream. Blue and yellow corundum of gem quality is associated with the rubies. By following up the gravels the corundum was located in a small vein in the decomposed peridotite.

At the Cullakeenee mine, Buck Creek, and near Elf, on Shooting Creek, Clay County, N. C., masses of emerald to grass-green amphibolite are found, through which are disseminated particles of pink and ruby corundum, ranging in size from that of a pea to some as large as hickory nuts. The corundum is not of gem quality, but the combination of the green amphibolite and pink corundum makes very beautiful specimens, and if the rock is hard enough to admit of a good polish, this occurrence might furnish a decorative or ornamental stone of some value.

At the Mincey mine, on Ellijay Creek, Macon County, and about 2½ miles northeast of Corundum Hill, there occurs a peculiar brown or bronze corundum, known locally as "pearl corundum," which shows distinct asterism, both by natural and artificial light, when the stone is cut en cabochon. In natural light these corundums all show a bronze luster and are somewhat similar to the cat's-eye, but in artificial light the star is more distinct. Most of the bronze corundum is in rough crystals, but some have been found that have the prismatic faces smooth and well developed, and these are often dark, almost black, in color.

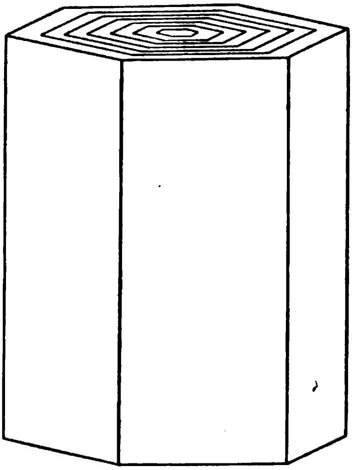

FIG. 7.—Corundum crystal, showing concentric hexagons on basal plane.

Asterism has been noticed in many of the rubies and sapphires from Cowee Valley and in a few of the sapphires from the Montana deposits. This asterism, according to Von Lasaulx, is sometimes produced by rifts due to the basal parting. These rifts, when examined with the microscope, are seen to be very thin, sharp, and rectilinear, and are parallel to the edge of the prism onto base.

In other cases asterism is undoubtedly due to the rutile or other mineral that is inclosed in the sapphires, which intersect each other at angles of 60°, and form a "sagenite web" or similar structure.

On many of the corundum crystals, especially of the sapphire variety, concentric hexagons were observed on the basal plane, as represented in fig. 7. The edges of the hexagon are parallel to the edges of the prism faces onto base, and the plane of the hexagon is parallel to the base. In a few of the transparent crystals this hexagon was observed as a web in the midst of the crystal, the plane of the web being parallel to the basal plane.

ORIENTAL SAPPHIRES.

The finest sapphires that are known are found in Burma and Ceylon, and have the rich, deep-blue color for which the oriental stone is noted. Sapphires of a rich, velvety blue and some very good stones of a lighter color have been obtained from Simla Pass, in the Himalaya Mountains. Siam has also produced some sapphires of very good color. The sapphire corundum from Australia is generally of an opaque, milky-white color.

NORTH CAROLINA SAPPHIRES.

No corundum gems were found in the United States until the opening of the Corundum Hill corundum mine at Cullasagee, Macon County, N. C., in 1871. This corundum is mined for abrasive purposes, but in certain parts of the deposit crystal corundum is occasionally found that is of a decided gem character, and, again, many of the fragments of the corundum have certain portions that are transparent. A number of very handsome dark-blue sapphires from this mine are in the United States National Museum, one of which weighs a carat.[1]

Yellowish and blue colors in the same specimen are rather common, and are sometimes sharply separated into consecutive bands, while in other specimens the colors merge into one another.

Sapphire gems of all the different colors have been found at Corundum Hill, and I have in my collection cut gems representing all these various colors. Many of them are, however, very small.

During the past ten years but few gems have been obtained from this mine, for the reason that the portion of the deposit from which these crystals were formerly obtained has not been worked. In the alluvial deposits below this portion of the mine many handsome crystals can be obtained by washing the gravel.

The green sapphire, which is the oriental emerald, is one of the rarest of gems. 'The Corundum Hill mine is the only place in this country at which the emerald-green sapphire has been found, and it

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[1] Kunz: Gems and Precious Stones of North America, 1890, p. 40.

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occurs very sparingly here, although the yellowish and light-green colors are not uncommon. What is probably the finest known specimen of the oriental emerald in the world came from this mine, and is now in the Bement collection. It is a crystal 4 by 2 by 1¼ inches; part of it is transparent, and several very fine gems could be cut from it.

At the Sapphire and Whitewater corundum mines, near Sapphire, Jackson County, N. C., fragments of sapphire of a fine blue color have been found, from which small but good gems have been cut.

Associated with the green amphibolite rock near Elf post-office, Clay County, N. C., deep-blue sapphires have been sparingly found. These bear the same relation to the amphibolite as the red and pink sapphire described on page 45.

MONTANA SAPPHIRES.

The only systematic mining that has been undertaken for sapphires is in Montana. Sapphires were first found in this State by miners who were washing the gravels of the bars on the Missouri River, to the east of Helena, for gold. These were first described in 1873 by J. Lawrence Smith,[1] but it was not until 1891 that actual mining was begun. During that year a number of companies were organized to work these bars for sapphires.

These bars are located from 12 to 18 miles east and northeast of Helena, and have been followed for a distance of about 12 miles from Canyon Ferry down the river to American Bar. At various intervals these bars have been worked for the sapphires and are designated by the following names, starting with the one that is farthest up the river: Emerald Bar, Cheyenne Bar, French Bar, Spokane Bar, Metropolitan Bar, Ruby Bar, Eldorado Bar, Dana Bar, and American Bar. The location of these bars is shown on the map (Pl. IV).

A few sapphires have been found as far down the river as Beartooth, but sapphires have not been found in large quantity below American Bar.

Above Emerald Bar there have been no sapphires found on any of the bars, but in the gravel of Magpie Gulch, less than a mile above Emerald Bar (at Canyon Ferry), many sapphires have been found by miners who were washing the gravel for gold. No sapphires have been found in situ in this gulch, but Kunz[2] has noted the occurrence of sapphires that were found in a dike of vesicular mica-augite-andesite which was about 6 feet wide and cut through the green slate below the gravels. In the gravel deposits at French Bar, about 3 miles below Canyon Ferry, a narrow dike was encountered last summer, 3 to 6 feet in width, that had greenish sapphires scattered sparingly through it.

This dike was encountered about 50 feet above the river and its strike as it cuts through the slate is N. 10° E., the dip being about 45° W.

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[1] Am. Jour. Sci., 3d series, Vol. VI, 1873, p. 185.

[2] Min. Mag., Vol. IX., 1891, No. 44, p. 396.

This rock is undoubtedly of the same character as that described by Kunz as occurring at Ruby Bar. From the occurrence of these two corundum-bearing dikes of andesite it would seem that the source of the sapphires found in the various bars along the Missouri River is a series of small parallel dikes with a slight northeast-southwest trend, like those described. As the sapphires are scattered so sparingly through these dikes, the amount of decomposition and erosion that was required to liberate those that are now found in the gravels must have been simply enormous.

The beds of gravel in which the sapphires occur are from 10 to 50 feet thick and rest for the most part upon slate, in bluffs that rise nearly 50 feet above the river. At Emerald Bar the gravel beds are nearly 130 feet above the river and rest upon granite rock.

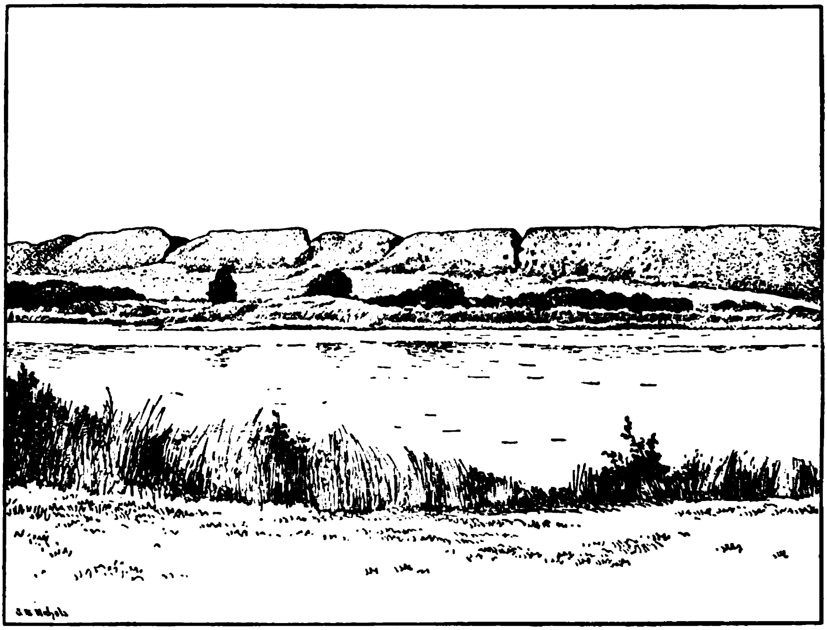

FIG. 8.—Spokane Bar sapphire deposits, Lewis and Clarke County, Mont.

Most of the mining has been done at Spokane and Eldorado bars. The former locality is near the center of the sapphire deposits and on the west side of the river about 16 miles due east of Helena. In 1895 these beds of gravel, which are 8 to 18 feet thick, were extensively mined by an English company known as the Montana Sapphire and Ruby Company. The gravels were washed by hydraulic methods and a great many gems were obtained, most of which were sent to England. This company also controlled or owned French Bar and Dana Bar on the west side of the river and Eldorado Bar on the east side.

It was reorganized in 1897 as an American company, known as the Eldorado Gold and Gem Company, with A. N. Spratt, of Oakland, Cal., president, and Frank Spratt, of Helena, Mont., manager. No work has been done at any of the bars by the present company. This bar is shown in fig. 8, the bluff rising from the river being 30 to 50 feet high.

Directly across the river from Spokane Bar, but about three-fourths of a mile from the river, is Metropolitan Bar, which has been worked during the summer of 1899 by different men who have staked out individual claims. The gravels are from 6 to 20 feet thick, and are washed in hand rockers, the water being obtained from shallow wells. Several of the claims are owned by Robbin Bird, Charles Johnson, and John Durrant, of Helena, Mont.

Above Spokane Bar, French Bar, Cheyenne Bar, and Emerald Bar no regular mining has been done during the last few years, but frequently different persons have worked in the old drifts for a few days at a time, washing by hand the gravel obtained.

A large part of the work done at Emerald Bar has been under ground, by means of shaft and drifts. Henry Crittenden, of Canyon Ferry, has done a large part of the work here, and still controls the deposits.

Below Spokane Bar, at Dana Bar, Eldorado Bar, and American Bar there was no mining for sapphires during 1899.

Most of the gems that have been obtained from these bars during 1899 have been put on the market through the Helena Lapidary Company, of Helena, Mont., of which William Knuth is manager. Mr. Knuth has done considerable work on these bars, and has been instrumental in the development of the Montana gem fields.

As mining investments these sapphire deposits have not thus far been financially successful, partly on account of the heavy capitalization of the companies who have bought the mines and partly on account of the color of the stones. They are, for the most part, of a pale-greenish or greenish-yellow color, and do not command a very high price in the market. Occasionally pink and yellow ones have been found that have cut good gems. Stones approaching a red or blue color are, however, extremely rare.

There are still a great many sapphires in the gravels that have not been worked, but on account of their color it is rather doubtful whether under the most favorable conditions it will pay to mine them.

The crystals from all these bars show the same development, and are prismatic in habit. The prism, a $(11\bar{2}0)$, is always present, and is usually in combination with the base, c (0001), and the unit rhombohedron, r $(10\bar{1}1)$, as represented in fig. 9, *A*. Some of the crystals have the prism very short and the rhombohedron is wanting, giving the crystal a very tabular appearance (fig. 9, *B*). A pyramid of the second order, n $(22\bar{4}3)$, was observed on some of the crystals in addition to the base and unit rhombohedron, and is represented in fig. 9, *C*.

The crystals are usually rough and more or less striated, so that no measurement could be made upon the reflecting goniometer, but sufficiently accurate measurements could be obtained with the contact goniometer to identify the faces.

The largest crystal that has been observed from any of these bars was one from Eldorado Bar that was nearly an inch long and three-eighths of an inch in diameter.

A repeated growth was observed on some of these crystals, but not in the variety of forms seen in the Cowee rubies (p. 43) and the Yogo Gulch sapphires (p. 52). Only one form of growth was observed, represented in fig. 9, A, which is a combination of the unit rhombohedron and the base.

Since the discovery and mining of sapphires from the Missouri River bars sapphires have been found at three other localities in Montana—at Rock Creek, Granite County; at Cottonwood Creek, Deerlodge County; and at Yogo Gulch, Fergus County.

The first two localities are about 80 and 30 miles southwest of those on the Missouri River, and the last one is about 80 miles to the northeast. From these sapphire deposits stones of deeper colors have been obtained, those from the first two being of all colors from blue to red, while those from the last are all blue.

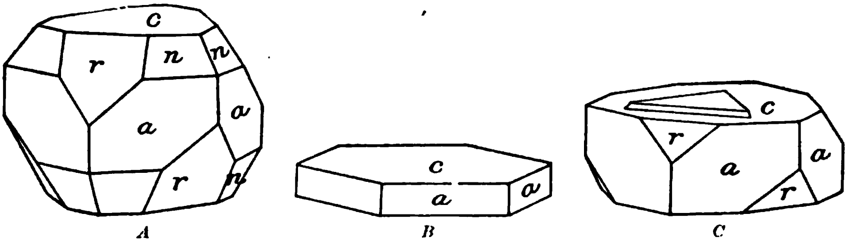

FIG. 9.—Sapphire crystals from Missouri River bars, Montana.

ROCK CREEK SAPPHIRES.

For information concerning the sapphire deposits of Rock Creek, I am indebted to Mr. William Knuth, of Helena. All the sapphires that have thus far been found in this section are in the gravel deposits on the West Fork of Rock or Stony Creek, in the southern part of Granite County, about 35 miles southwest of Phillipsburg, the county seat, and 30 miles nearly west of Anaconda, Deerlodge County. (Pl. IV.)

The sapphires are found in rather a limited area, which is bounded roughly by the gravels of Cold Creek, Myers Creek, tributaries of the West Fork of Rock Creek, and that portion of Rock Creek lying between them.

These gravels were extensively worked during the summer of 1899, principally by William Knuth, of Helena, and William Moffitt, of Phillipsburg. Altogether about 200,000 carats of rough sapphires were obtained. Of these about 12,000 carats are fit for cutting. In color they are much more varied than those from the Missouri River bars, and the prevailing color, which is greenish to bluish green, is deeper. No deep-blue sapphires like the oriental stones have been found, but paler blue ones have been obtained, from which very handsome sapphires 2 or 3 carats in weight have been cut. Some of the finest yellow sapphires (oriental topaz) that I have ever seen have been found at Rock Creek. One of these weighed close to 2 carats when cut. Pale green and bluish green are among the common stones, some cutting gems of 5 to 8 carats in weight. A number of beautiful pink sapphires have also been found.

Few red and ruby-colored crystals have been found and none that would cut a gem over a twelfth of a carat in weight. These colors are extremely rare in the Montana sapphire deposits.

The crystals and fragments of sapphires that are found in these gravels do not show as much abrasion as those from the Missouri River, probably because they have been carried a shorter distance from where they originated.

In habit the crystals are very similar to those already described from the Missouri River, and fig. 9 will also illustrate very well the character of the Rock Creek crystals. One type that is very noticeable is a short prismatic crystal, whose diameter nearly equals its length. A parallel growth on the basal plane is only occasionally observed, and is composed of the basal plane and unit rhombohedron.

No sapphires have as yet been found in situ, but a few have been found in the gravels that were embedded in the original matrix. Mr. Knuth, to whom I showed a specimen of the andesite containing sapphires from French Bar, said that it very closely resembled the small fragments of rock carrying sapphires that he had found at Rock Creek. It is not at all improbable that these sapphires originated in the same type of rock as those of the Missouri River and that small dikes of andesite will be found in the divide between Myers, Cold, and Quartz creeks. A very few sapphires have been found on Quartz Creek.

While the sapphire gems from Rock Creek do not command so high a price as the ruby and the deep-blue sapphires, and are regarded more as fancy stones, they are coming to be quite highly prized by many who are acquainted with them. As yet but few of the Rock Creek sapphires have been put on the market except locally at Helena, and it seems to me that it can be confidently predicted that these sapphires will become important in the jewelry trade when they are once known.

COTTONWOOD CREEK SAPPHIRES.

The sapphire deposits on Cottonwood Creek are in Deerlodge County, about 30 miles southwest of Helena and 10 miles east of Deerlodge, the county seat. There has not been a great deal of work done on this creek, so that the extent of the sapphire-bearing gravels is not known. The sapphires are similar in character to those of Rock Creek, but they are apt to be of lighter color and not of such a variety of colors. What little work was done on the creek during the past summer was by Franz Cobalt, of Helena, and according to him there were but few sapphires taken out of the gravels. Future development at this locality may show these deposits to be of considerable importance and extent.

YOGO GULCH SAPPHIRES.

The sapphires that are the most widely known and that have attracted the most attention have been obtained in Fergus County near the entrance of Yogo Gulch, on the Yogo Fork of Judith River. This locality is on the eastern slope of Prospect Ridge of the Little Belt Mountains, about 75 miles northeast of Helena and 15 miles a little south of west of Utica, which is the nearest town, and which is on the Judith stage line. The sapphires were first found in the gravels of Yogo Fork, and in following these up the creek their original source was located in dikes that extend across the county for a mile and a half.[1]

There are two parallel dikes about 800 feet apart, with a general east-west trend, which vary in width from 15 to 75 feet. The mineralogical composition of the rock shows that it has a close affinity with minette and shonkinite, as described on page 28.

The alluvial deposits below these dikes have been pretty thoroughly worked for the sapphires, and mining operations are now confined almost entirely to the dikes themselves. These dikes, the upper portion of which is thoroughly decomposed, have been worked by means of open cuts, the limestone making fairly firm walls. By hydraulic processes the decomposed rock was readily broken up and washed into sluice boxes. As the mining extended deeper the rock was much less altered and it was necessary to leave a great deal of it exposed to the atmosphere from one season to the next, before it could be broken up and run through the sluice boxes. At a number of points the almost perfectly fresh rock has been encountered, and from this it will be a difficult problem to separate the sapphires. The percentage of sapphires in the rock is small and if it were the unaltered rock that had to be worked for them the deposit would not be of economic importance.

The sapphires occur embedded in this rock in distinct crystals from less than a millimeter in diameter to some that were over 15 mm. Their color, as far as I have observed them, is always a blue, varying from light blue to a very few that showed the dark blue of the Ceylon stone. The prevailing color is a bright blue.[2]

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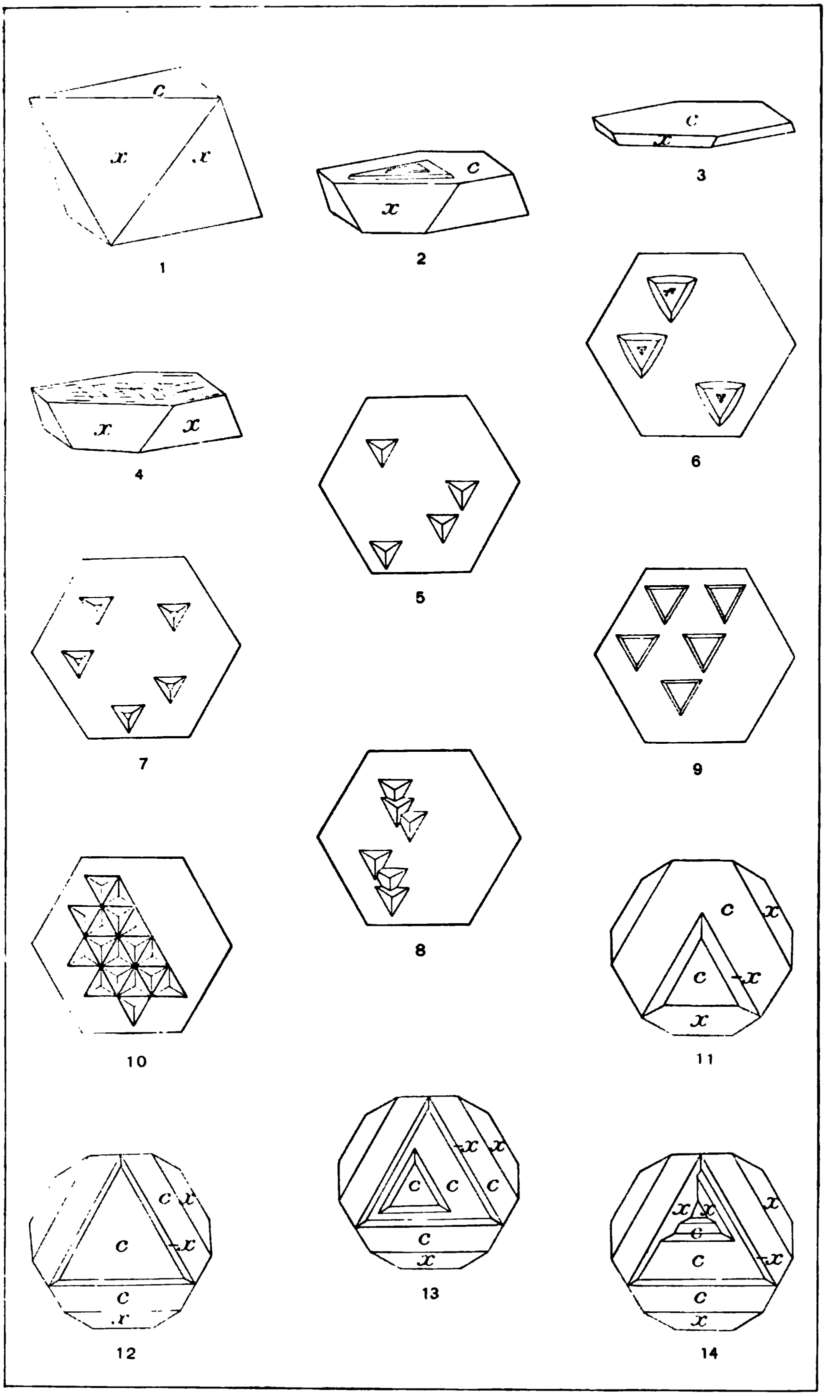
[1] The geology of the district and a full description of the mines and workings, by W. H. Weed, will be found in the Twentieth Ann. Rept. U. S. Geol. Survey, Part III, 1899, pp. 454-460.

[2] Kunz: Am. Jour. Sci., 4th series, Vol. IV, 1897, p. 420.



SAPPHIRE CRYSTALS FROM YOGO GULCH, FERGUS COUNTY, MONT.

While the color of these sapphires is not as dark as the highly-prized Ceylon stones, they show a richness and brilliancy not equalled by the oriental stone. They not only show a strong rich color by transmitted light, but their color is almost as good by reflected light. Then again, while many blue sapphires make beautiful day stones but are dull at night, the Yogo sapphire is a very brilliant night as well as day stone.

The crystallography of these sapphires is markedly different from that of the sapphires of the Missouri bars and Rock Creek (page 50). The latter all show a prismatic development, while the former are all rhombohedral crystals, none of which show the presence of any prism face.[1]

The crystals are etched and striated to such a degree that no crystallographic measurements on the reflecting goniometer were possible; but sufficiently accurate angles were obtained with the contact goniometer to permit the identification of the faces. The only two faces that could be identified were the base c (0001) and the rhombohedron x ($30\bar{3}2$) which is a new face for corundum. On one crystal two very small faces were observed which were too small to be measured with the contact goniometer, but were probably the faces of a pyramid of the second order.

In determining the rhombohedron, ten or more independent measurements were made of $c \wedge x$. These varied from 66° to 68°, but approximated closely to 67°, which agrees very well with the calculated value, $67° 3'$, for $0001 \wedge 30\bar{3}2$. These crystals are represented on Pl. V.

The crystals are developed, as shown in figs. 1, 2, and 3 of Pl. V, the prevailing type being like fig. 3 of Pl. V. The crystals vary from those where the base is very largely developed, having a diameter of 8 mm., while the rhombohedron is only 1 mm., to those that have the base and the rhombohedron equally developed (fig. 1 of Pl. V). Where the faces are more equally developed, the rhombohedral faces are generally rounded.

The basal plane often shows characteristic striations which are parallel to the three intersections of the base c and the rhombohedron x, as shown in fig. 4 of Pl. V. These lines are sharp and distinct and on the very flat crystals can easily be measured when examined under the microscope. The rhombohedral faces are very roughly striated without showing any distinct parallel lines.

One very common development of these crystals is a repeated growth on the basal plane of the rhombohedron x ($30\bar{3}2$) and the base c (0001), as represented in fig. 2 of Pl. V. These growths are exceedingly varied, as is shown in figs. 11–14 of Pl. V, where they are drawn in basal projection. In fig. 11 of Pl. V there is but one secondary rhombohedron and base, which has one of its rhombohedron faces a continuation of one of the rhombohedron faces of the crystal.

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[1] Am. Jour. Sci., 4th series, Vol. IV, 1897, p. 424.

Fig. 12 of Pl. V represents a repeated growth, each face of which is entirely distinct from the faces of the main crystal. In fig. 13 of Pl. V there are represented two, and in fig. 14 of Pl. V a series of such growths, where a number of the rhombohedral faces coincide. These growths occur most frequently on the flat crystals. The thickness of the rhombohedron rarely reaches 1 mm. and often they are so thin that they appear like striations.

This repeated growth is very similar to that described as occurring on the Cowee rubies (p. 43). Bauer,[1] in an article entitled "Ueber das Vorkommen der Rubine in Birma," has described this same style of development as occurring on the Burma rubies, but it is not so general as on the Montana corundums.

Etching figures.[2]—The etching figures which were observed on nearly all the crystals examined were on the basal plane. The figures are very perfect, and although showing many different forms, they all have a rhombohedral symmetry. Fig. 5 of Pl. V represents the common etching figure, which is a rhombohedral depression terminating in a point. The edges of the depression are sharp and well defined, as are also the intersections of the rhombohedral faces of the depression. These rhombohedral faces were smooth and gave fair reflections of the signal on the reflecting goniometer. In measuring them the entire crystal except the depression to be measured was covered with a thin coating of wax. Two different crystals were measured, which gave for rhombohedron on rhombohedron 22° 30′; this corresponds to the rhombohedron $10\bar{1}7$, for which the calculated value is 21° 50′. Figures of the same style were observed whose edges were parallel to those of the negative rhombohedron; these, however, are not common in isolated forms.

Another common form is represented in figs. 7 and 9 of Pl. V, where the depression is bounded by the basal plane, which at times is so large that the rhombohedral plane is hardly visible. Fig. 6 of Pl. V represents etching figures, where, on the basal plane of a shallow depression, there is one additional etching figure and sometimes two. These second etching figures are like the common ones shown in fig. 5 of Pl. V. The outer rhombohedral contour of these figures is generally rounded. This is also usually the case with the deeper depressions.

Often the etching figures are intergrown, fig. 8 of Pl. V, and when many of these occur together they have the appearance of raised figures rather than of depressions. This raised appearance is very striking when there is a combination of the plus and minus rhombohedron in parallel position and without overlapping, fig. 10 of Pl. V.

The figures vary considerably in size, but most of them are near 1 mm. in diameter. A few were observed that were nearly 2 mm. in diameter.

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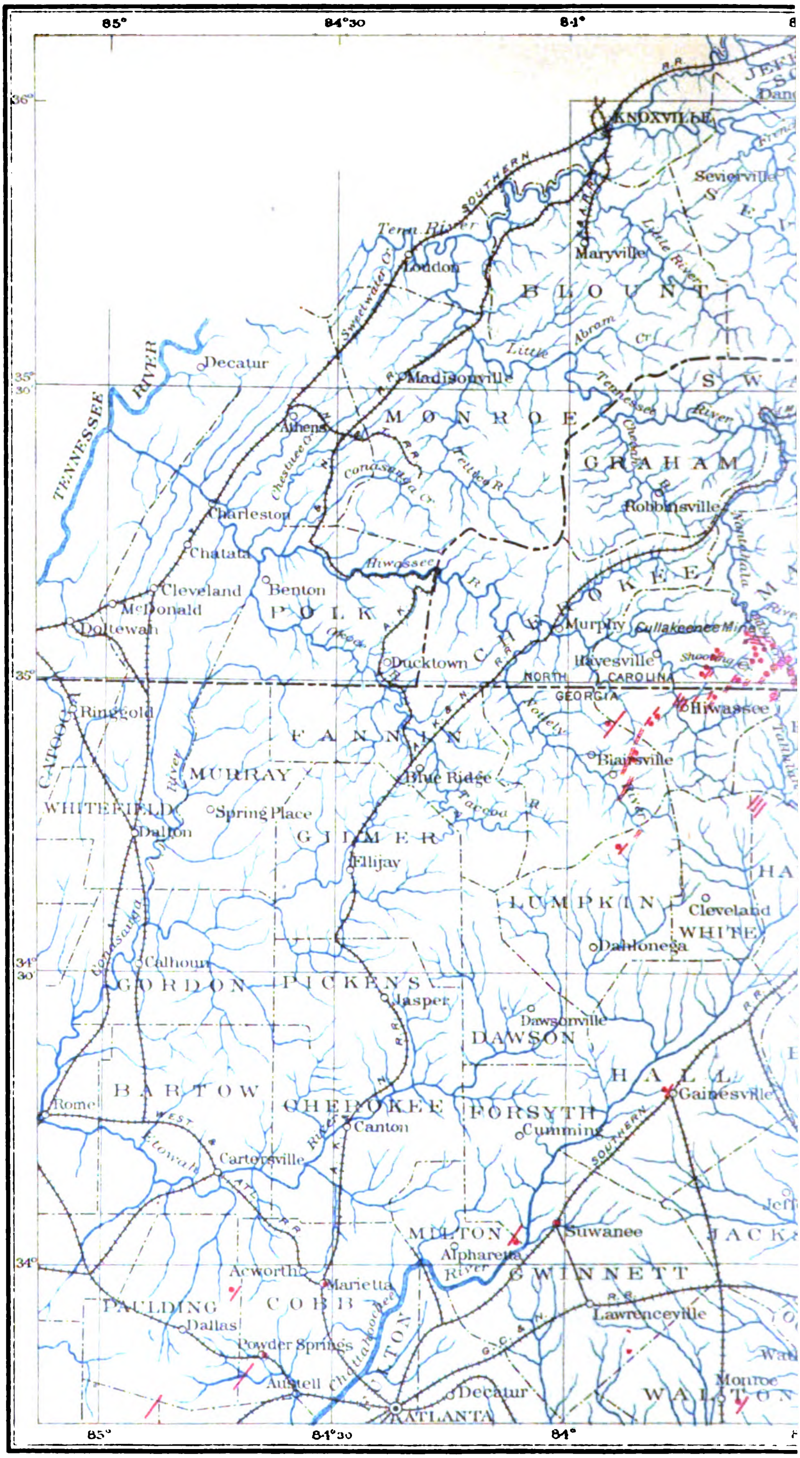
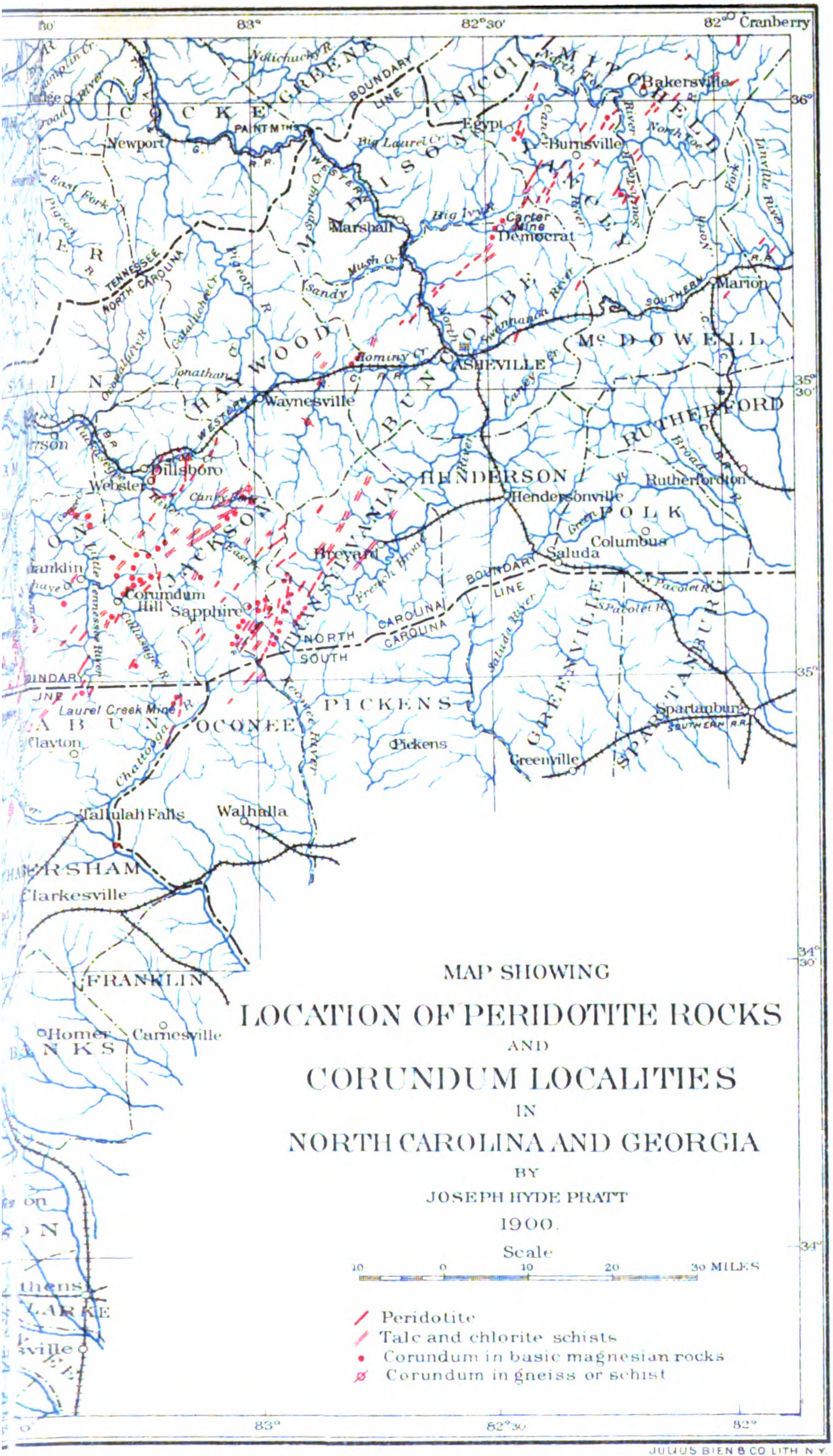
[1] Neues Jahrbuch für Min., Geol. und Pal., Vol. XI, 1896, p. 209.

[2] Am. Jour. Sci., 4th series, Vol. IV, 1897, p. 426.

U. S. GEOLOGICAL SURVEY





MAP SHOWING

LOCATION OF PERIDOTITE ROCKS AND CORUNDUM LOCALITIES IN NORTH CAROLINA AND GEORGIA

BY

JOSEPH HYDE PRATT

1900.

Scale

10 0 10 20 30 MILES

/ Peridotite

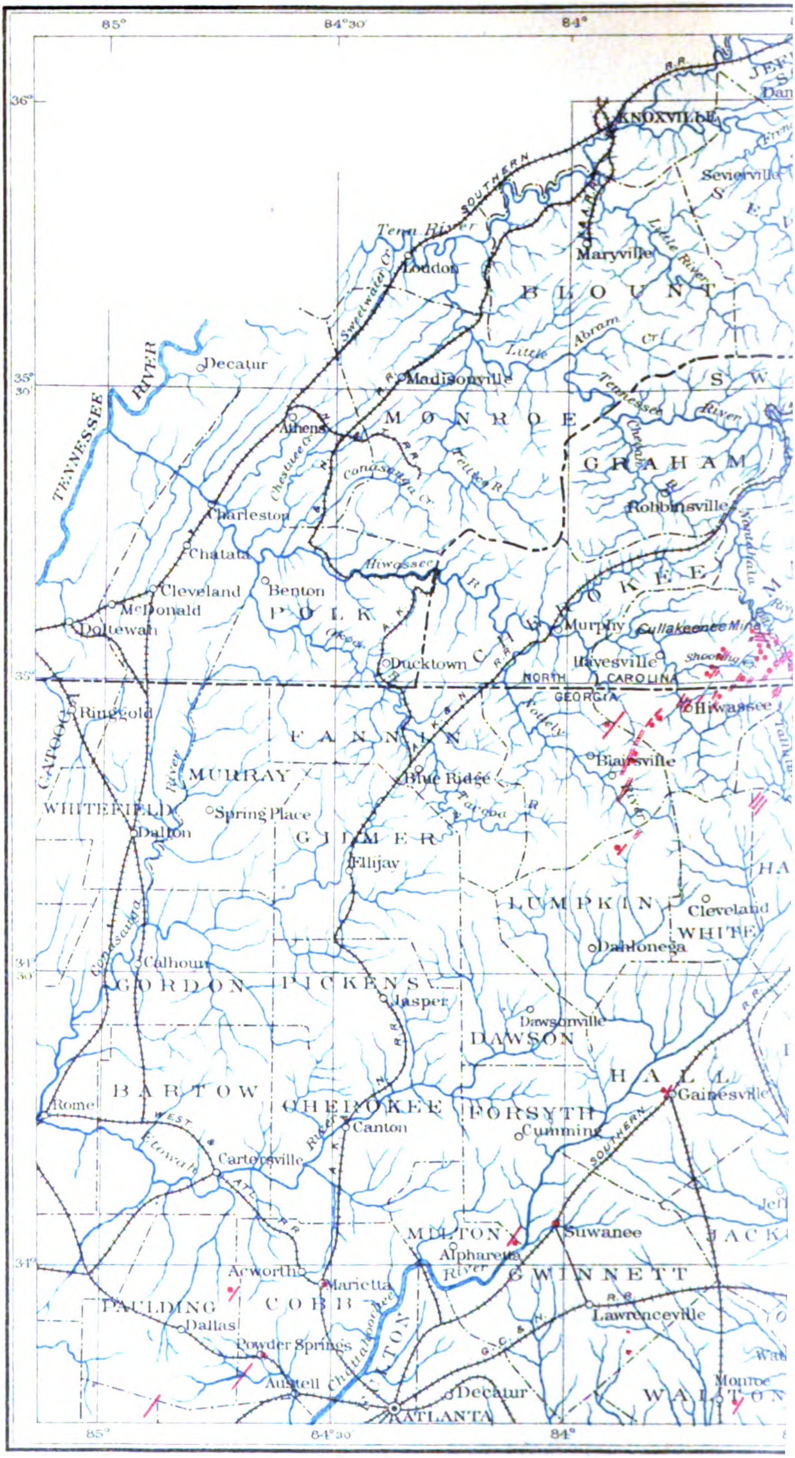
/ Talc and chlorite schists

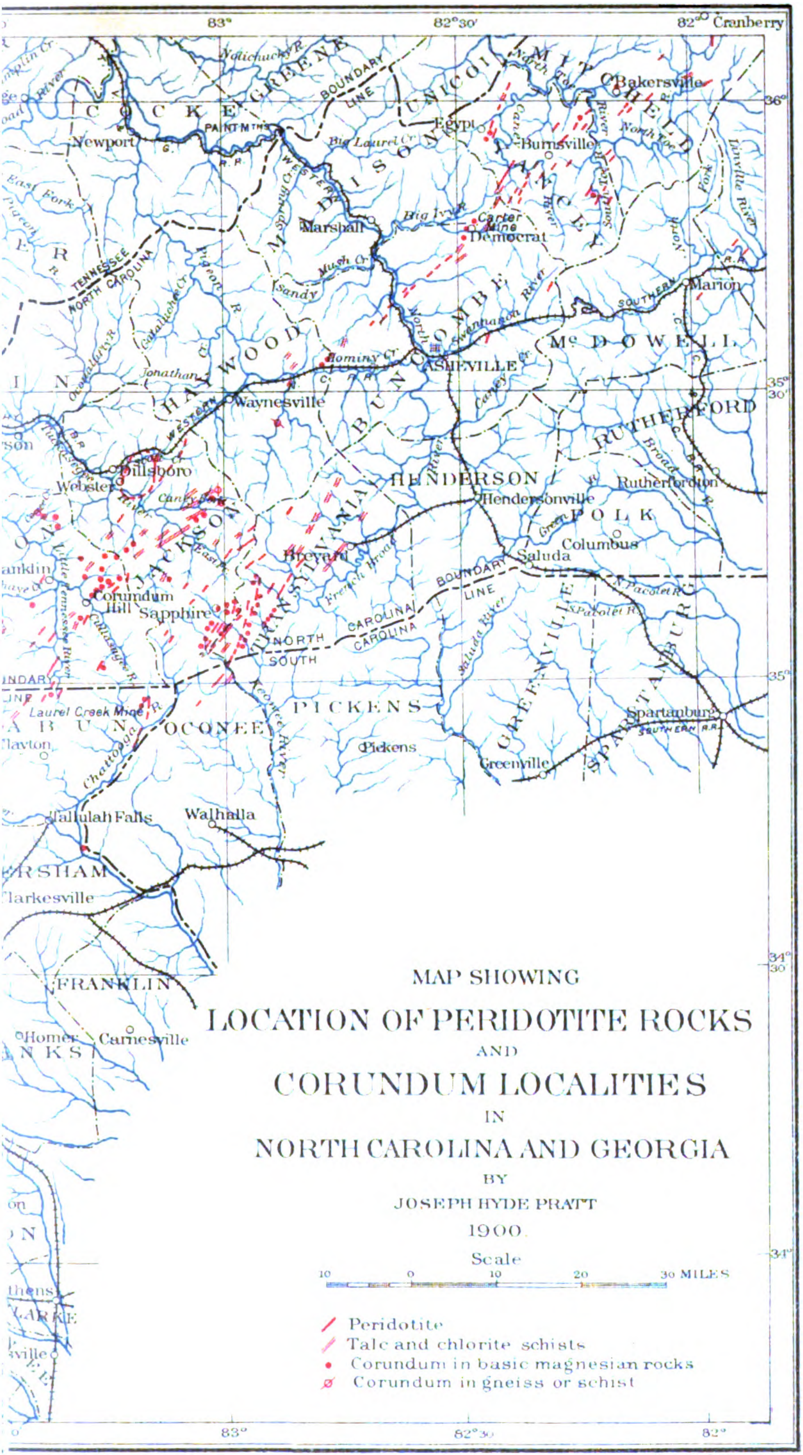
● Corundum in basic magnesian rocks

ø Corundum in gneiss or schist

JULIUS BIEN & CO. LITH. N.Y.

U. S. GEOLOGICAL SURVEY





MAP SHOWING

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/ Peridotite
/ Talc and chlorite schists
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ø Corundum in gneiss or schist

JULIUS BIEN & CO. LITH. N.Y.

Bauer[1] has described etching figures that he observed on the base 0001 and the pyramid $22\bar{4}3$ of the Burma rubies. Those on the base are similar to the figures in fig. 5 of Pl. V, except that the outside contour of the rhombohedron is rounded.

These sapphire deposits are now controlled by the New Mine Sapphire Syndicate of Utica, Fergus County, Mont., and London, England, of which Mr. George A. Wells, of Great Falls, Mont., is president. Mr. S. S. Hobson, of Lewiston, Mont., one of the directors of the company, states in a recent letter that 130,000 carats of cuttable material were taken out last season. Besides this there is a large amount of very small crystals and badly flawed larger crystals that are not capable of being cut into gems and that are sold by the ounce. The largest rough stones that have been found weighed 11 to 12 carats, and from these were cut gems weighing 5 to 6 carats. One of the better stones taken out the season of 1899 weighed 4 carats when cut and is valued at over $75 a carat. All of the material is shipped to London.

That the American gems are being appreciated is shown by the large orders that are received for them from Paris, London, and New York.

CORUNDUM.

Under this head are included all the translucent to opaque varieties of all colors, subdivided into block, crystal, and sand corundum. While a sharp line can be drawn between corundum and emery, no such distinction can be made between corundum and sapphire, for many pieces of the former are found that have transparent portions. Many sapphire gems have been found in masses of corundum that were being mined for abrasive purposes.

In the following descriptions corundum deposits have been taken up by States in the order of supposed importance. Many of the beds are briefly noticed, but the larger and more important deposits are described in detail.

NORTH CAROLINA.

Most of the corundum localities in North Carolina are, in a general way, indicated on the map (Pl. VI), except the very few that are east of the Blue Ridge. In the following descriptions only those deposits have been considered which have been mined for corundum or which hold out a promising prospect for the mineral. These will be taken up by counties, the more important ones first.

MACON COUNTY.

Corundum was first discovered in this county in 1870 at what is now known as the Corundum Hill mine, and mining was begun here about a year later. This mine has become one of the most important corundum deposits in this country. It is situated about 8 miles southeast of Franklin, the county seat, on the northeast side of Cullasagee Creek, a tributary of the Little Tennessee River.

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[1] Loc. cit., p. 212.

The corundum found at this mine occurs in peridotite rock, and this has been worked very extensively, especially near the contact of this rock with gneiss. Pl. VII gives a general view of this peridotite formation, and shows to a certain extent the number of openings that have been made in it. The hill is about 350 feet high, the summit being about 500 feet above the level of Cullasagee Creek. Fig. 10 is a topographic map of this same peridotite formation, and shows the location of the various mines. The formation is a rather blunt lens-shaped mass of the dunite variety of peridotite, and has about 10 acres of surface, over most of which the rock is exposed. As is seen from this map, most of the mines are located near the contact of the dunite with the gneiss or schist, and follow contact veins of corundum. A number of dunite veins have been worked within the formation, but with the exception of the one marked "Shaft" on the map, they have all soon pinched out.

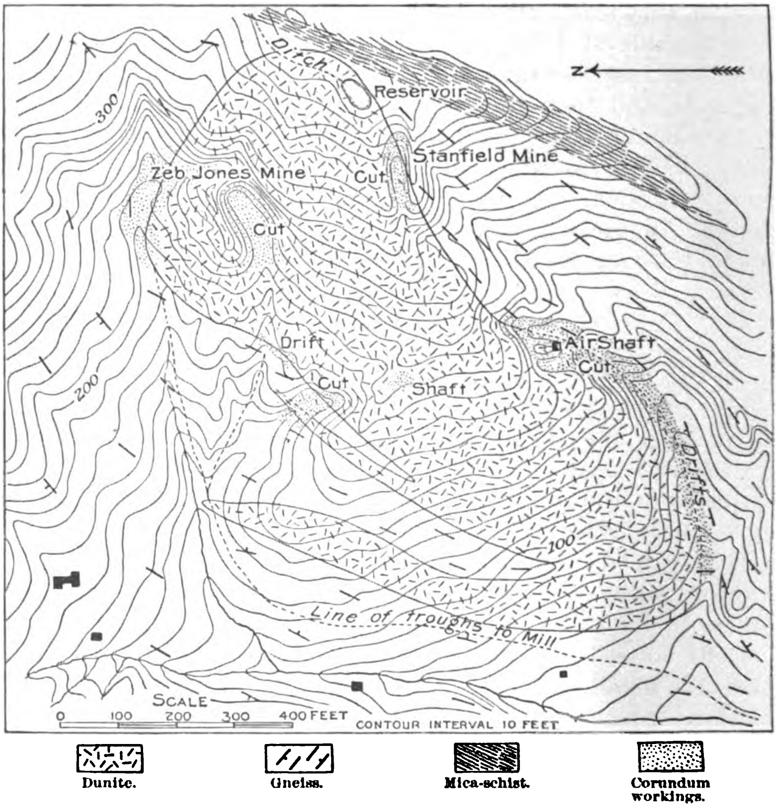
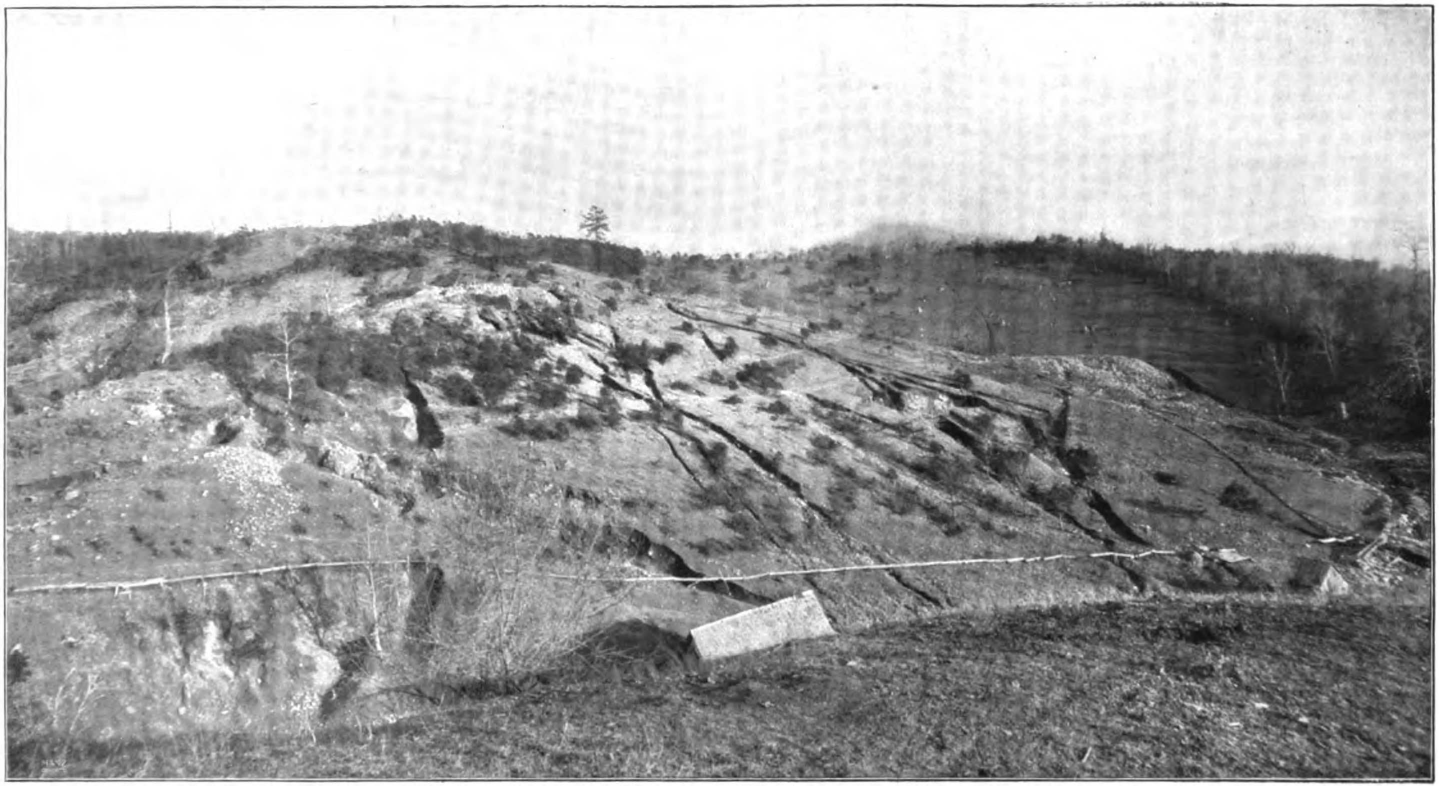
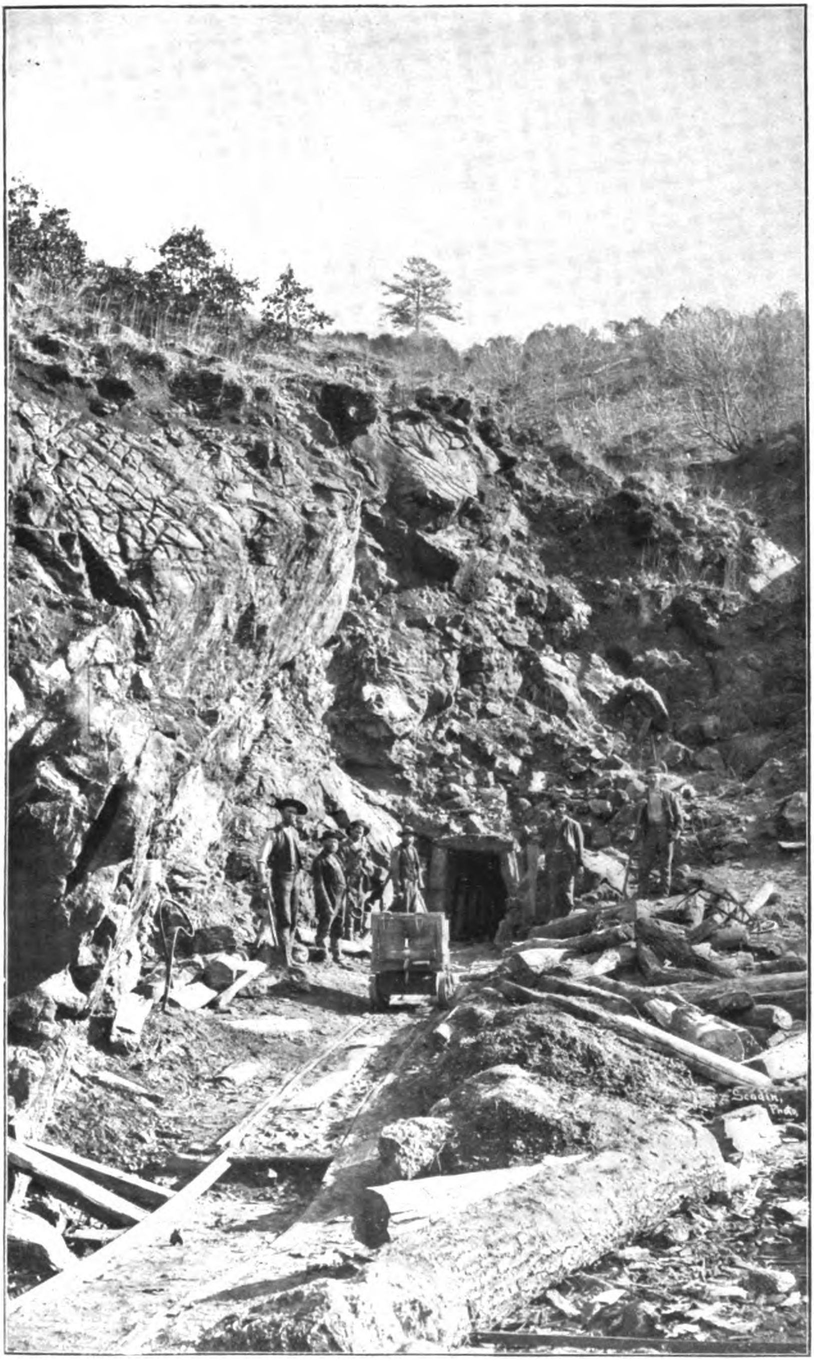


FIG. 10.—Map of the peridotite formation at Corundum Hill, Macon County, N. C.



GENERAL VIEW OF THE PERIDOTITE FORMATION AT CORUNDUM HILL, MACON COUNTY, N. C.



THE BIG VEIN BETWEEN THE PERIDOTITE AND THE GNEISS AT CORUNDUM HILL, MACON COUNTY N C.

Most of the mining has been done on the south side of the formation, where was encountered what is known as the Big vein. This was first mined by means of open cuts and later by tunnels, the last one being about 300 feet below the summit of the hill. Pl. VIII is a view of the entrance to this tunnel, and shows the peridotite rock on the left and the gneiss on the right beyond the cut. For nearly the whole distance of the southern boundary of the dunite formation a cut has been made following the contour of the hill. This cut was sometimes wholly within the gneiss, at other times wholly within the peridotite, and again cutting directly on the contact. The tunnels are all to the left of the cut, and they have encountered corundum almost continuously for a distance of 1,280 feet, reaching nearly to the southeast boundary of the formation. Pl. IX is a view of the upper or southeastern end of this cut, showing the peroditite on the left and the gneiss and schist on the right. The upper part of this cut is known as the Stanfield mine. A tunnel has been run into the hill near the contact, at the head of which the vein of corundum is 8 to 10 feet wide. No work has been done at this mine for a number of years.

On the northeast side of this formation is what is known as the Zeb Jones mine, where there was exposed (July, 1899) a bench of ore 25 feet in depth and 2 to 5 feet in width, uncovered for a distance of 50 feet, which averaged very close to 50 per cent corundum. This vein carries what is known as "buckwheat" corundum, which, as its name suggests, is made up of small, irregular particles of corundum about the size of buckwheat grains.

Numerous dunite veins have been found and worked, but they can be mined profitably only when they are large contact veins, for the reason that they are very likely to pinch out after being worked for a short time.

From these various openings, collectively known as the Corundum Hill mine, block, crystal, and sand corundum ores have been obtained, all of which can be readily cleaned and will make a commercial product that can be used in the manufacture of any kind of corundum wheel. A small amount of garnet is occasionally found associated with the corundum in the vein along the southern contact, but this portion of the ore can be readily eliminated by hand cobbing at the mine. This is the only mine that produced any quantity of corundum during 1899. It is now owned by the International Corundum and Emery Company, of New York, N. Y.

The water of Cullasagee River is utilized for the washing and cleaning machinery of the mill, which is located about a mile and a half below the mine, at Cullasagee. A line of sluice boxes connects the mine with the mill, and all the corundum ore that can be readily broken to pieces is carried down to the mill in these boxes.

There are many outcrops of peridotite on Ellijay Creek, a few miles north of Cullasagee, and at many of them corundum has been found.

The most work that has been done is at the Mincey mine, which is 2 miles northwest of the Corundum Hill mine. At this locality a considerable quantity of corundum has been taken out, which was carried to the mill at Cullasagee and cleaned. Pl. X is a view of this open cut, which was entirely within the formation. Judging by the amount of corundum obtained and by that found near the contact of the dunite with the gneiss, there are good indications of the existence of corundum in quantity along the contact. The corundum that was obtained at this mine was hauled by wagons to the Corundum Hill mine, where it was cleaned. This property is owned by the International Corundum and Emery Company, of New York, N. Y.

Between the Corundum Hill and Mincey mines there is a bold outcrop of dunite on the Gray property, covering about the same surface as that at Corundum Hill. Although there has been no mining here, the little prospecting that has been done has shown corundum to be very thickly scattered along the lower borders of the formation, and many small pits that have been sunk within the formation have encountered corundum. This, in my opinion, is one of the most promising prospects for corundum in Macon County.

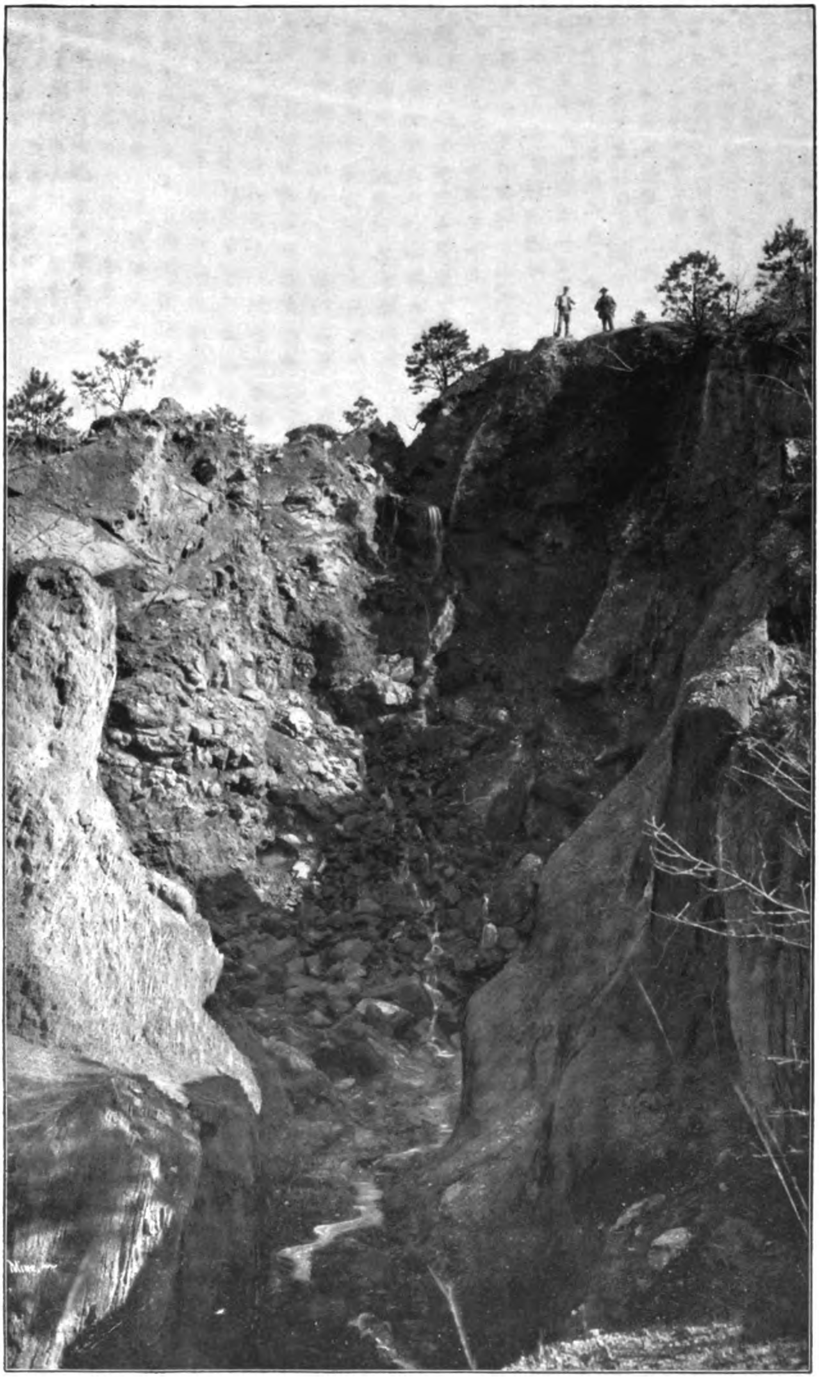
A great many of the peridotite formations along Ellijay Creek have been worked a little at different times, and these are mentioned in the lists of corundum localities (p. 83).

Sheffield mine.—This mine is in Cowee Township, about 7 miles northeast of Franklin, the county seat, just north of Cowee Creek. The corundum occurs here in amphibole-schist, and is described on page 31. On account of the depth to which decomposition has extended, the solid rock was only observed in the lower portions of the 87-foot shaft, so that nothing definite is known of this corundum-bearing amphibole-schist. The corundum, which is pink in color and which occurs in oval-shaped nodules up to an inch in diameter, has been pretty thoroughly mined down to the hard rock. The corundum is of good quality, and some preliminary tests have shown that it is well adapted to the manufacture of the vitrified wheel. On account of the low percentage of corundum in the rock, it is not at the present time a profitable corundum ore.

The saprolitic ore is readily cleaned, and furnishes a nearly pure commercial product. A small mill has been erected here. This property is owned by the National Abrasive Manufacturing Company, of New York, N. Y.

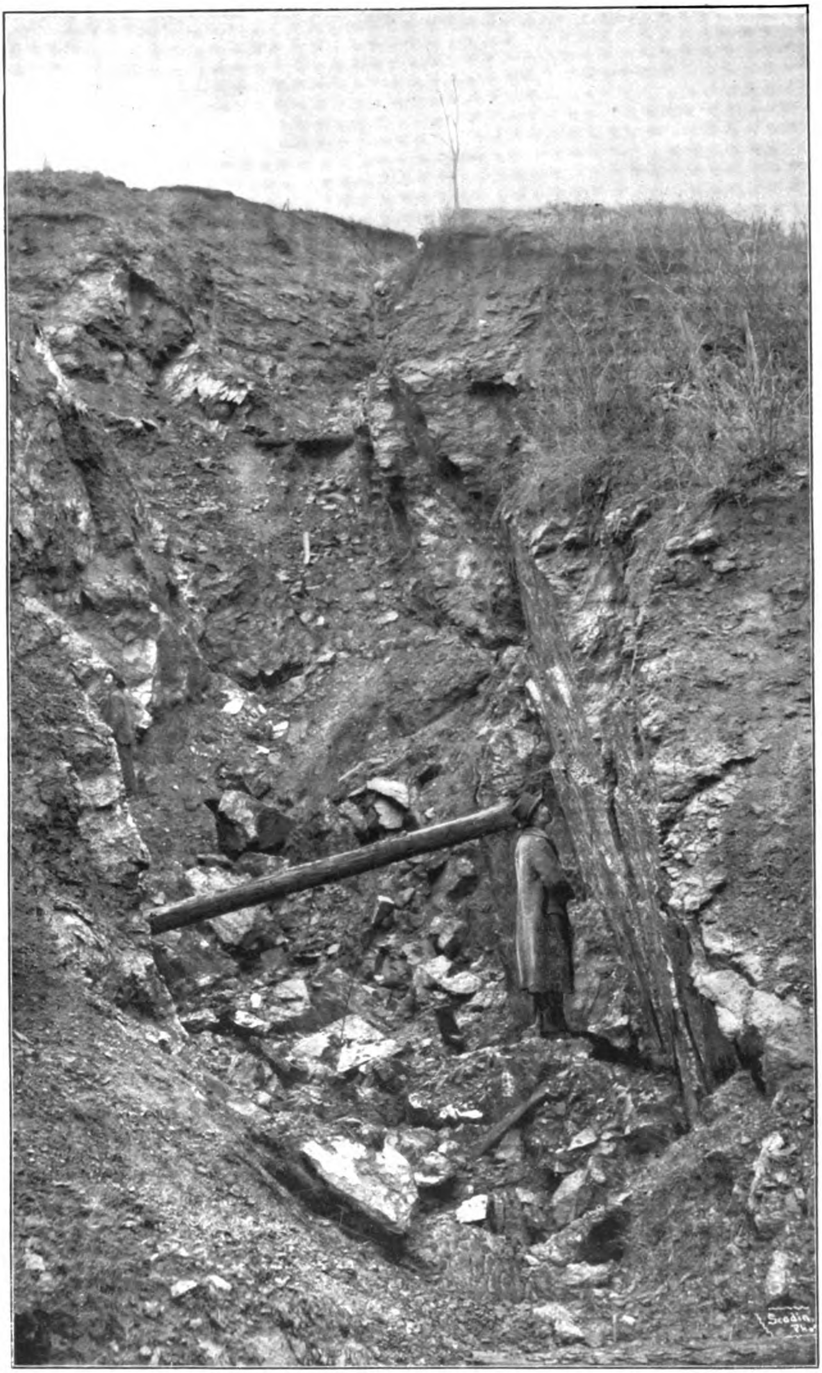
CLAY COUNTY.

Buck Creek or Cullakeenee mine.—This mine is in the Buck Creek Valley, about 20 miles southwest of Franklin, Macon County, and 21 miles a little north of east of Hayesville, the county seat of Clay County. These corundum deposits are associated with a compact mass of peridotite, covering about three-quarters of a square mile, the largest



UPPER END OF BIG CUT AT CORUNDUM HILL MINE, MACON COUNTY, N. C.

Peridotite is shown on the left and gneiss and schist on the right.



OPEN CUT ON DUNITE VEIN AT THE MINCEY MINE, MACON COUNTY, N. C.

mass that is known in the Appalachian belt. Fig. 5 (page 22) is a topographic map of this formation, and shows the relation of the amphibolite to the peridotite and the location of the various openings that have been made for corundum. There has been but very little systematic mining for corundum in this locality, and most of the work has been in the nature of prospecting. Numerous cuts and pits have been made at a great many points on the formation, most of which have shown the presence of corundum. The principal work is at the east end of the formation, near the contact of the dunite with the gneiss, where a shaft 40 feet deep was sunk partially on the contact vein. A number of open cuts in this same vicinity have penetrated into the same vein. This vein is different from most of the corundum veins in the peridotite rocks, in that it is composed essentially of plagioclase feldspar and hornblende, which bear a similar relation to each other as the feldspar quartz and mica in the pegmatitic dikes. Pl. XI, *A*, is a general view of the Buck Creek formation, showing the shaft mine and the location of the contact vein that has been opened. With this exception all the pits and cuts that have been made are within the formation itself, and where they encountered corundum it was in small pockets, the remains of larger dunite veins. Pl. XI, *B*, shows one of these dunite veins. From the amount of corundum exposed by prospecting and the work done in the shaft, there is without doubt a large amount of corundum associated with these peridotite rocks, and if the mine were more accessible to the railroad it would offer one of the best corundum prospects in the country. At the present time, however, the nearest shipping point is Murphy, which is over 40 miles to the west. The nearest point on the Murphy branch of the Southern Railway is only 18 miles, to which a good road can be built that would not cost much more than the first 18 miles of the road to Murphy. Buck Creek offers ample water supply for running a mill sufficient to clean whatever corundum would be mined here. This property is also owned by the International Corundum and Emery Company, of New York. The ore is not difficult to clean, and, as far as can be judged from a superficial examination, should make a commercial product that can be used in the manufacture of the vitrified wheel.

Blue Ridge corundum tracts.—Under this head are included the long bands of corundum-bearing quartz-schist that have been found in the southeastern part of the county and in the adjoining county of Georgia (Rabun County). Parallel bands of this corundum-bearing schist have been followed for a number of miles close to the summit of the Chunky Gal and the Yellow mountains. As is stated on page 35, the amount of corundum in this schist is probably not over 5 per cent, and with such a low percentage of corundum these rocks are not to be considered, at the present time at least, as a source of this mineral.

There are four tracts included under this head, which are described below.

The Scaly Mountain tract is near the headwaters of Beech Creek, a prominent eastern tributary of the Tallulah River, on the southern and southwestern slopes of Scaly Mountain, at the elevation of about 4,500 feet. The corundum-bearing bands of schist have been traced for the distance of about 2 miles, with a general strike of N. 40° E. and with a dip approximately 20°–30° NW. Considerable prospecting has been done in tracing this band of schist, but experiments show that there is less than 5 per cent of corundum in this schist, although some specimens have yielded 12 per cent. The latter were probably pieces broken off along planes of lamination of the schist, while the rest of the piece from which they were broken off carried but little corundum.

The Foster tract is in Georgia, about 1¼ miles from Scaly Mountain, and the State line forms its northern boundary. It is on both sides of Falls Branch, one of the smaller western tributaries of the Tallulah River, and is about 3,500 feet above sea level. Here a number of pits have been made and samples of corundum have been obtained which have assayed on an average about 5 per cent of this mineral. There is more garnet associated with the corundum in this ore than in that from any of the other localities.

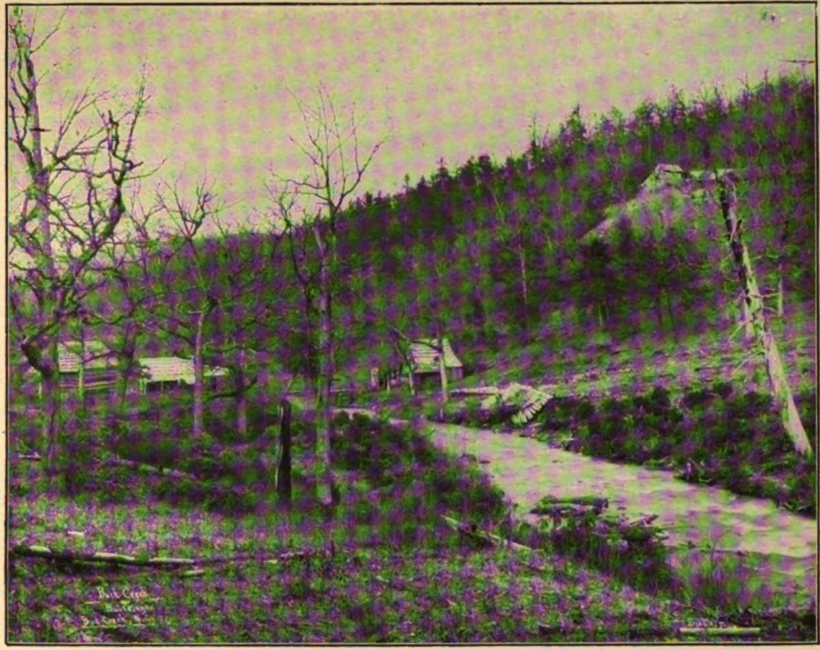
The Yellow Mountain tract is on the north of Scaly Mountain, on the northern slopes of the Yellow Mountains. No prospecting has been done here, and from the indications the ore is the same grade as at the other localities.

The Chunky Gal tract is at the summit and along the western slopes of the Chunky Gal Mountains, near the headwaters of Sugar Cove Creek. With a few interruptions, the corundum-bearing schist has been traced for over 2 miles, with a strike and dip approximately the same as on the other tracts. A number of pits and cuts have been made, from which considerable ore has been taken out and tested, and the tests show the percentage of corundum to be practically the same as at the others.

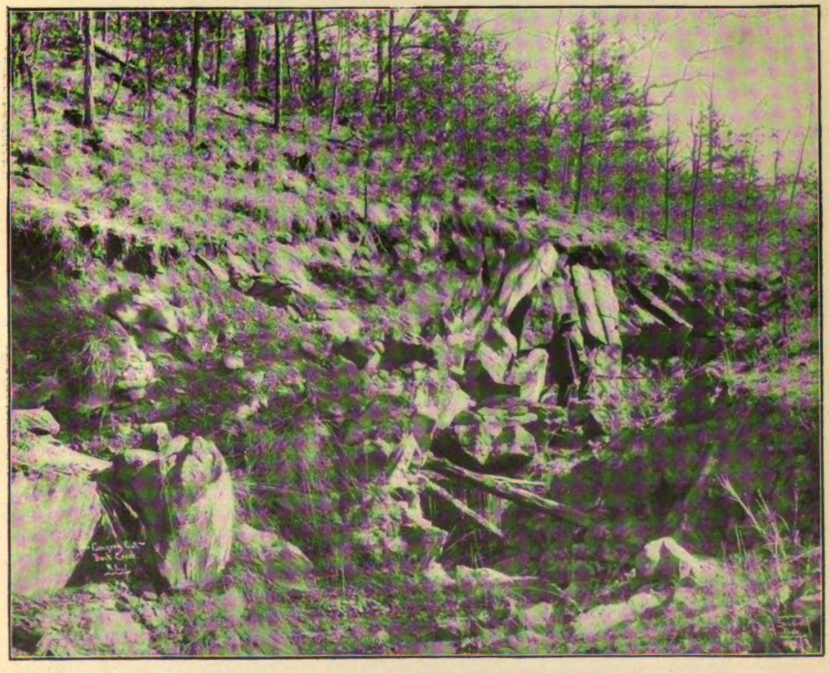
The corundum bands of the schist in all the tracts vary considerably in width, some being not over a foot or two wide, while others are 18 feet. In these wider bands, however, there are apt to be bands of the normal schist. More or less garnet has been found associated with the corundum in all the schist, and if in any amount would have to be eliminated or it would prevent any commercial corundum obtained from these ores being used in the manufacture of the vitrified wheel.

From the extent of the corundum-bearing schist, there is undoubtedly a large quantity of corundum in this section, but the low percentage of corundum in the rocks makes it very questionable whether they can be profitably worked.

The Corundum Mining and Manufacturing Company, of Philadel-



A. GENERAL VIEW OF THE BUCK CREEK CORUNDUM MINE AND PERIDOTITE FORMATION, CLAY COUNTY, N. C.



B. DUNITE VEIN OF CORUNDUM IN THE PERIDOTITE FORMATION AT BUCK CREEK, CLAY COUNTY, N. C.

phia, Pa., has recently been organized to work the deposits on the Scaly Mountain and Foster tracts. The only mining that has thus far been done consists of an open cut extending 35 feet on the band of corundum-bearing quartz-schist. About 1,000 tons of ore have been taken out, a small portion of which has been crushed and cleaned. The point at which mining was begun is on the southwestern slopes of Scaly Mountain at an elevation of nearly 4,500 feet. The crushing plant has been erected close to the cut. The cleaning mill is about 2,000 feet lower on Scaly Mountain, the crushed ore being conveyed thither in a flume.

No definite method of cleaning has as yet been decided upon. Experiments have been made with jigs and a Bartlett table, but they have not proved very satisfactory. The garnet and magnetite in the ore are to be separated by the electro-magnet. No corundum has as yet been cleaned for the market.

JACKSON COUNTY.

Perhaps the most important corundum locality in this county is in the extreme southeastern portion, in the vicinity of Sapphire, extending over into the adjoining county, Transylvania. In this section there is a series of about 30 outcrops of peridotite, which extend in a general northeast-southwest direction. All these outcrops are small, and corundum has been found associated with many of them. The location and relative size of the larger of these outcrops and the places where corundum has been mined are represented on the map, fig. 11. Most of this has been at the Bad Creek and Socrates mines, but the greater part of the work done at any of them has been in the nature of prospecting.

At the Burnt Rock mine, which is located about 5 miles northeast of Sapphire, all the mining has been done within the peridotite formation, and about 10,000 to 12,000 pounds of corundum have been taken out. It is of good quality and occurs in white crystals and knotty nodules. The ore is free from garnet and can be readily cleaned. From the amount of work done here the indications are that there is a considerable quantity of good corundum associated with the peridotite near its contact with the gneiss. The mining at the Brockton mine was also within the peridotite, and about the same amount of corundum was taken out as at the Burnt Rock mine. The corundum occurs in dull-gray crystals, which are easily cleaned and separated from the gangue. These two mines are in Transylvania County. Just below this mine, on the slopes of Poplar Ridge, a vein of corundum was exposed in October, 1900, by workmen who were making a new road. The corundum is massive, and gives good indications of occurring in quantity.

The little work that was done at the Sapphire mine shows a considerable quantity of white and gray corundum, often speckled with blue, very similar to the corundum found at the Whitewater mine, 6 miles south of the Sapphire mine. The Socrates mine is about three-quarters of a mile southwest of the Sapphire, in a bold outcrop of peridotite. The corundum is in small, knotty nodules and is easily cleaned. A contact vein was encountered, but little work was done to develop it.

The Bad Creek mine has been worked more than any other in this section, and is located about three-quarters of a mile nearly south of Sapphire. The work done at this mine has been almost entirely on a contact vein which has been exposed for the distance of 130 feet and has been worked at one point to a depth of 60 feet. The corundum ore that was encountered in this vein is of two distinct kinds; in one the corundum is associated with garnet and hornblende, and in the other, which is free from garnet, the corundum is in a matrix of biotite-mica. These two ores should always be kept separate, for the corundum can readily be cleaned and separated from the associated minerals in the biotite ore and will yield a product that can be used in the manufacture of the vitrified wheel; but the corundum can be separated only with difficulty from the ore that contains the garnet. Unless

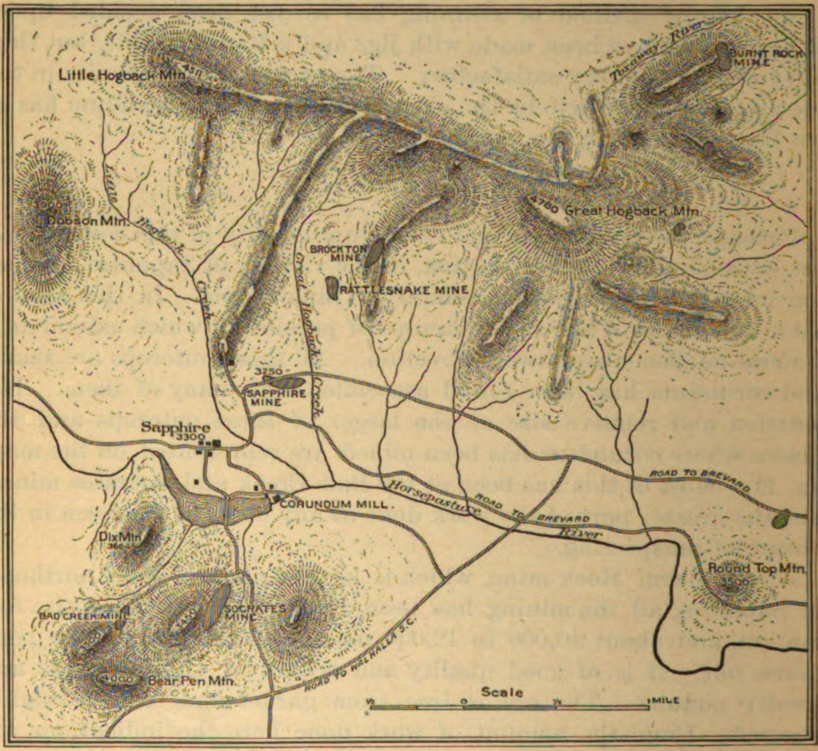


FIG. 11.—Map of the peridotite areas in the vicinity of Sapphire, Jackson County, N. C., showing the location of the different corundum mines.

the garnet can be entirely eliminated this ore will not make a product that can be used for making the vitrified wheel. The vein has an average width of nearly 9 feet, and will carry from 15 to 20 per cent of corundum. All these mines just referred to belong to the Toxaway Company, Sapphire, N. C.

Corundum has been found at a number of the peridotite outcrops between the Bad Creek and the Whitewater mines; and while this does not by any means indicate that there are large deposits of this mineral in these rocks, it does indicate, taking into consideration the corundum deposits already found northeast and southwest of these, that there is a possibility of such deposits, and it makes this section a promising one for systematic prospecting.

GEORGIA.

The corundum localities of this State are shown on the map (Pl. VI), which also gives the general location of the peridotite formations that have been observed in this section. Although there is considerable peridotite occurring in the northern portion of the State, it is at but few places thus far that corundum has been found in any quantity, and these are at the extreme northern part, not far from the North Carolina line.

Georgia corundum is well known, and perhaps has the best reputation of any on account of that obtained from the Laurel Creek mine, which, with the exception of the Track Rock mine, is the only one that has produced any considerable quantity of corundum. The peridotite formations are not so large as in North Carolina, nor are the corundum localities so numerous, and it is not probable that there is as much corundum in this State as in North Carolina, although the Laurel Creek mine may be superior to any one thus far located in North Carolina.

Laurel Creek mine.--This mine, which is owned by the International Corundum and Emery Company, is located at Pine Mountain, Rabun County, Ga., and is 18 miles from Walhalla, S. C., the nearest point on the railroad. At this locality there is a large outcrop of peridotite, covering several hundred acres, and along the contact of this with the gneiss large deposits of corundum have been found. Several openings have been made, some of which have been worked very extensively. Fig. 12 is a topographic map of this peridotite formation, showing the general location of the cuts and shafts that have been made. As is seen from the map, the formation extends over two small hills, which, on account of their rough and barren nature, offer a sharp contrast to the surrounding country. There is a large open cut (1 in fig. 12) on the east side of the formation, which follows for the most part along the contact, is 200 feet in depth at the lower end, and gradually rises until at the upper end the surface is reached.

At its lower end this cut encountered what is known as the Big vein of massive corundum, the cut having followed on a contact vein of crystal corundum. Pl. XII is a photograph of this cut, which shows the gneiss very distinctly on the left and the peridotite on the right, with the shaft house in the foreground.

The Big vein of massive corundum, for which this mine is noted, is at the foot of the south slope of the hill, and has been followed from the lower end of the cut (1, fig. 12) for a distance of over 300 feet, represented by the dotted lines, with the shaft house (4, fig. 12) near the western end. Although this vein is near the contact of the peridotite with the gneiss, it is separated from it by a band of peridotite and a small vein of sand corundum. There is some doubt whether the block of gneiss (2, fig. 12) is entirely surrounded by the peridotite or whether it penetrates the peridotite from the main mass of gneiss. From what could be seen, and from information obtained from Mr. Andy Evans, foreman of the mine, it has very much the appearance of being entirely inclosed in the mass of peridotite. The Big vein, which has been worked by an inclined shaft 116 feet deep, with tunnels 300 feet in length running from this, has brought the work up to the block of gneiss just referred to, and, according to Mr. Evans,

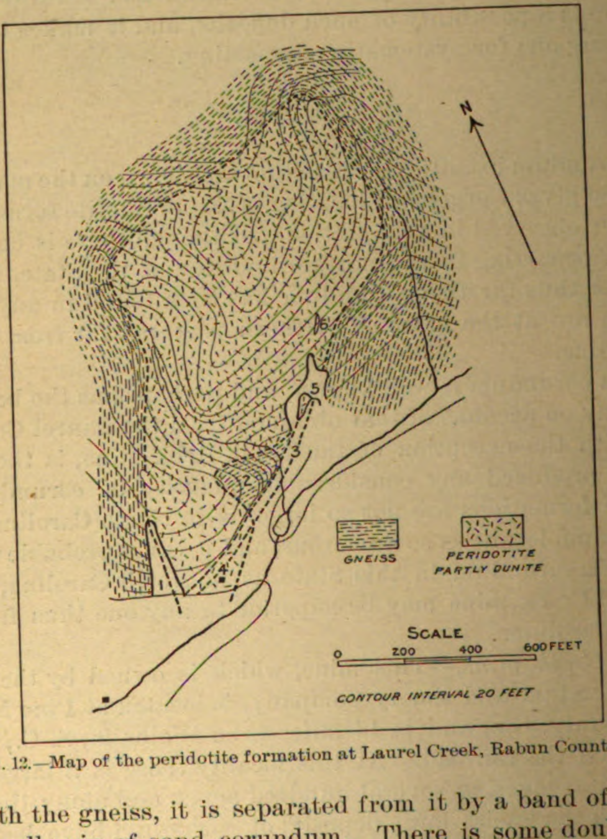
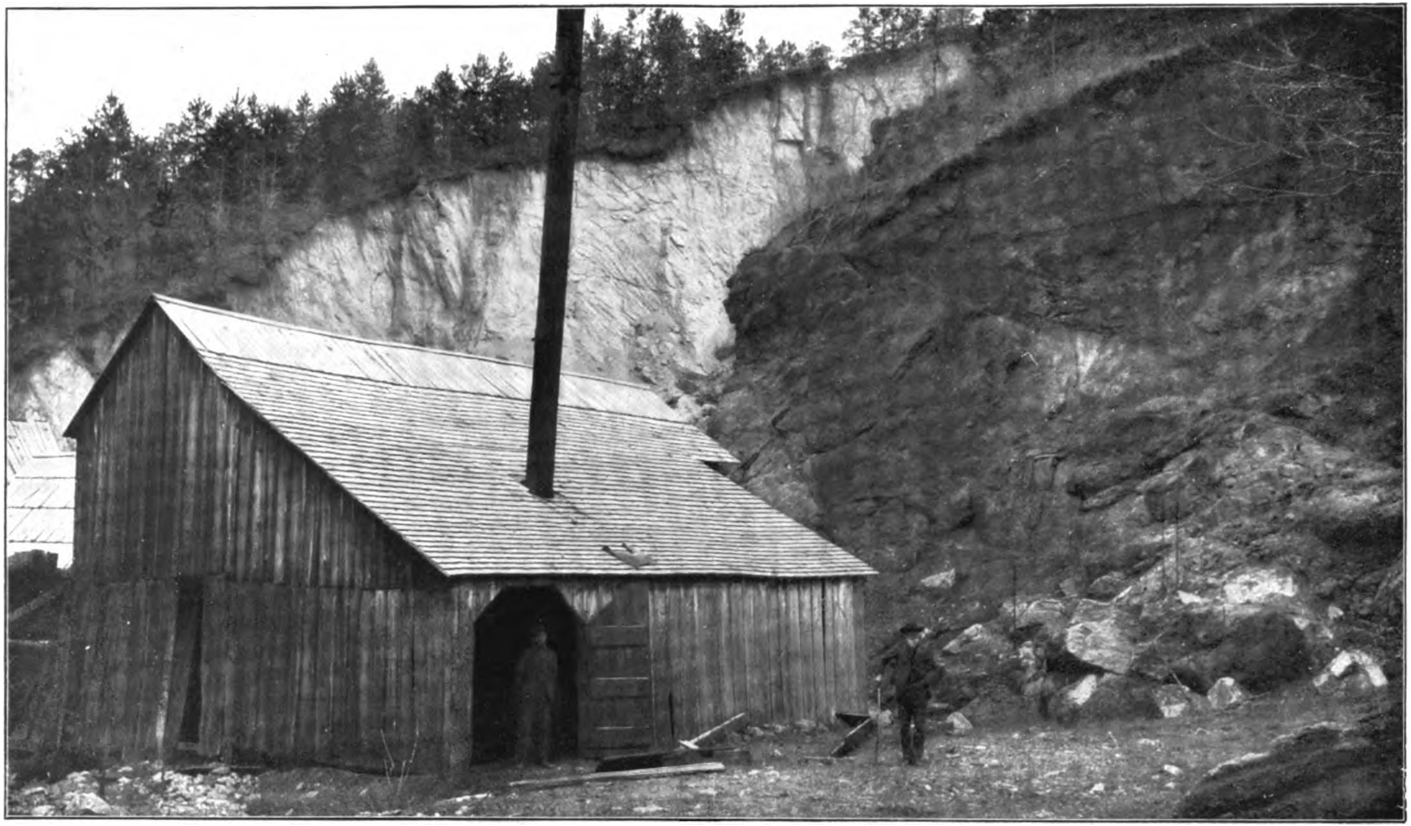


FIG. 12.—Map of the peridotite formation at Laurel Creek, Rabun County, Ga.



OPEN CUT ON PERIDOTITE-GNEISS CONTACT AT LAUREL CREEK, GEORGIA.

Shaft house in foreground.

a little work was done farther to the east which showed the corundum vein to extend on the south side of the block of gneiss, and it is not at all improbable that this vein continues as represented by the dotted line 3. Open cuts on the east and west side of this block of gneiss have followed contact veins of corundum. Pl. XIII, *A*, is a photograph of the peridotite formation near the cut on the east side. Little work has been done at Laurel Creek except on contact veins, the principal exception being a small dunite vein (6 in fig. 12) near the west end of the formation, from which considerable corundum was obtained, but the vein soon began to pinch out. Pl. XIII, *B*, is a photograph of this vein, showing both the hanging and foot walls of peridotite. At 5, fig. 12, considerable work has been done, and some large crystals, for which this mine is noted, were obtained here.

This is perhaps the most famous corundum mine in this country, and has furnished ore from which an exceptionally good commercial product has been obtained.

It has not been worked since 1894, when the tunnels and shafts of the Big vein were cut off by the slipping of a large block of the peridotite formation, nearly a 200-foot cube. It is that portion of the formation represented on the map (fig. 12) between the open cut (1) and the cut to the west of the block of gneiss (2).

Track Rock mine.—The location of this mine is in the northeastern part of Union County, Ga., on the south side of Track Rock Gap. The corundum occurs in a peridotite formation, which is very much decomposed on the surface, there being very little visible but a mass of chlorite-schist containing more or less actinolite. A tunnel, having its upper end 75 feet below the surface, has been run in on the formation for about 200 feet, with short branching tunnels at several points. From the material cut through by the tunnel, which was examined by King,[1] of the Georgia geological survey, the rock was found to be an altered peridotite, made up of small grains of chrysolite surrounded by actinolite, and containing many grains of magnetite. It may be that the original of this rock was the peridotite amphibole-picrite.

All the work that has been done at this mine has been entirely within the formation, and the best results would be obtained near the contact of this rock with the surrounding country rock.

Foster mine.—This mine, which is located in the northeastern part of Towns County, Ga., just over the North Carolina line, has been described with the other mines occurring in this vicinity under the head of "Corundum in North Carolina," on page 60. The corundum occurs in a quartz-schist, and the property is owned by the Corundum Mining and Manufacturing Company, of Philadelphia, Pa.

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[1] Bull. Geol. Survey Georgia No. 2, 1894, p. 93.

SOUTH CAROLINA.

In the northeastern part of York County, from 3 to 4 miles west of the Catawba River, on the land between Allison and Crowder creeks, corundum has been found in a belt about 200 to 300 yards wide which skirts along the western slopes of Nannies Mountain. This locality is about 12 miles northeast of Yorkville, S. C., and 25 miles southwest of Charlotte, N. C.

Mining operations have been carried on at two distinct portions of this belt, one a mile north of the summit of Nannies Mountain, on the property of Alexander Rickard. The work done here consists of a shaft about 35 feet deep, from which several drifts have been run, which penetrate what is probably a light-gray granite, but it is much decomposed and of a sandy constituency. The only solid material encountered were irregular masses of black cleavable corundum associated with muscovite mica. In the surrounding fields float corundum ranging in size from small particles to masses of several pounds in weight are abundant, and many tons of this have been picked up and shipped.

A little to the west of the south end of Nannies Mountain, about 1½ miles from the Rickard mine, there is a similar occurrence of corundum. There have been a number of shallow cuts, ditches, and pits made in prospecting for corundum, but apparently none was found in place. The corundum that was found is often wrapped in mica.

The mode of origin of this corundum has not been determined, for up to the present time the exact nature of its occurrence is not definitely understood, as no exposure of the corundum can be seen which shows its relation to the rock in which it occurs. Neither can it be stated whether it is to be found in quantity.

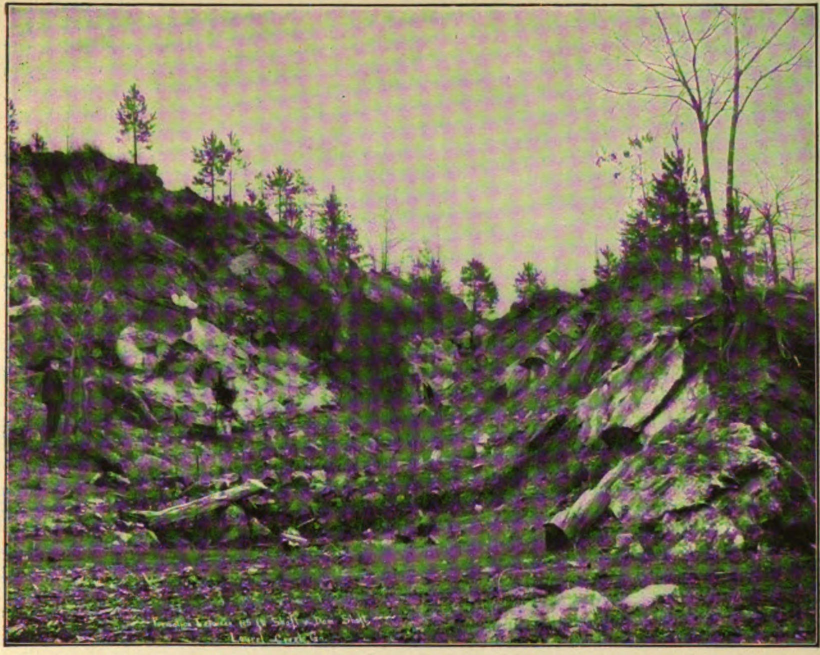
PENNSYLVANIA.

The corundum in this State, so far as can be learned, is all associated with the serpentine rocks in Chester and Delaware counties and occurs near the contact of this rock with the gneiss. Considerable feldspar (plagioclase) similar to that described from the Big vein at Buck Creek, N. C., is usually crystallized out with the corundum.

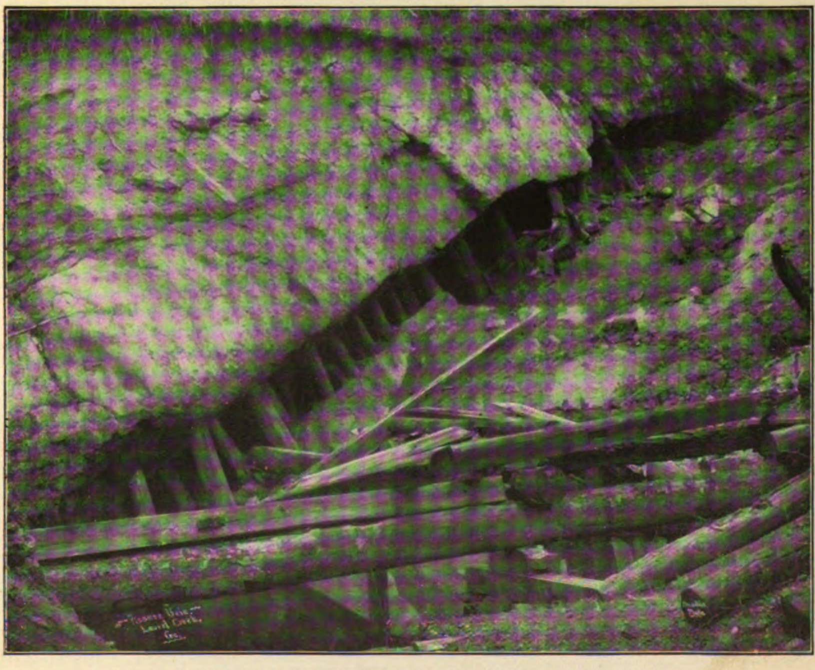
Corundum has been found more abundantly near Unionville, in Newlin Township, Chester County. It is found here in a mass of serpentine rock, with an average width of about 800 feet and a length of 1 mile. A number of tons of corundum have been obtained from this mine, but during the last ten years little or no work has been carried on here. Associated with the corundum are tourmaline and spinel.

MONTANA.

Most of the corundum that has been found in Montana has been of the sapphire variety, but at one locality near Bozeman, Gallatin



A PERIDOTITE FORMATION AT LAUREL CREEK, GEORGIA.



B. DUNITE VEIN OF CORUNDUM AT LAUREL CREEK, GEORGIA.

County, a variety has been found that may upon development prove to occur in commercial quantity. While no tests have been made to determine the abrasive quality of this corundum, preliminary fire tests have been made which indicate that it is suitable for use in the manufacture of the vitrified wheel. Then, again, the percentage of corundum in the ore, simply judging from the hand specimens, is high enough to make this a workable ore if in sufficient quantity. A description of the rocks in which the corundum occurs is given on page 30.

EMERY.

Until recently the only emery known to occur in the United States was that at Chester, Mass., and Peekskill, N. Y., the principal mining being done at the latter place. Emery has now been found in North Carolina in a very promising prospect. As is stated on page 9, emery is a mechanical mixture of corundum and magnetite, or sometimes hematite. From its striking resemblance to iron ore, especially where it is a mixture of corundum and magnetite and is therefore magnetic, both the deposits at Chester and Peekskill were first worked as iron ores, and it was not for some time that their real nature and value were understood. Since then the deposit at Chester has been worked continuously and extensively.

Spinel is sometimes associated with the emery and increases in amount until it is largely in excess of the corundum, and the ore passes over into what might well be called a "spinel emery."

MASSACHUSETTS.

The only deposit of emery that has been found in this State is in the vicinity of Chester, where the emery vein has been traced for nearly 5 miles. The vein is first encountered about 2 miles northwest of the village of Chester, in a ledge that projects into Westfield River from its left bank. The vein can be followed almost continuously along the line of the strike—south to a little east of south. It extends across the east slope of Gobble (North) Mountain, drops down into and crosses the narrow valley of Walker Brook, and then rising, it crosses South Mountain and can be followed for over 2 miles to the south. The map (fig. 13) shows the general position of this emery vein, the places that have been opened along it, and the location of the different emery mills. The emery occurs in an amphibolite, which has been described on page 23.

Beginning at the southern end of the vein the first work has been done about half a mile north of where the vein disappears, at what is known as the Wright mine. About twenty years ago rather extensive mining was being carried on here, the work consisting of an open cut nearly 1,400 feet long that was worked to a depth of 6 feet at its southern end and about 30 feet at its northern, with probably an average depth of 20 feet for the entire distance. Emery varying in width from 3 to 20 feet was encountered throughout nearly the entire length of the cut.

This mine was reopened in 1899, a shaft 87 feet deep having been sunk on the vein near the southern end of the cut and drifts run out from this. Margarite is the most conspicuous accessory mineral, and specimens that can rarely be excelled have been found here.

Continuing nearly half a mile to the north on the vein and near the top of the mountain is the Melvin mine. There is a shaft here 40 feet deep, from which drifts are being run. This shaft is but 1,250 feet from the head of the upper tunnel of the Old mine, the next one to the north. It is in this Old mine that the most extensive work has been done. Fig. 14 is a cross section of its underground workings. The mouth of the lowest tunnel is but 8 feet above Walker Brook and 75 feet to the south of it. As is seen from the diagram, the emery does not occur continuously throughout the vein, but in pockets or chimneys which dip into the vein about 30° N. From the work already done these seem to hold this direction rather constantly, so that the pockets can be approximately located at a given depth. It was in the first chimney of emery (see map, fig. 13) that the beautiful specimens of diaspore, for which this mine is noted, were found.

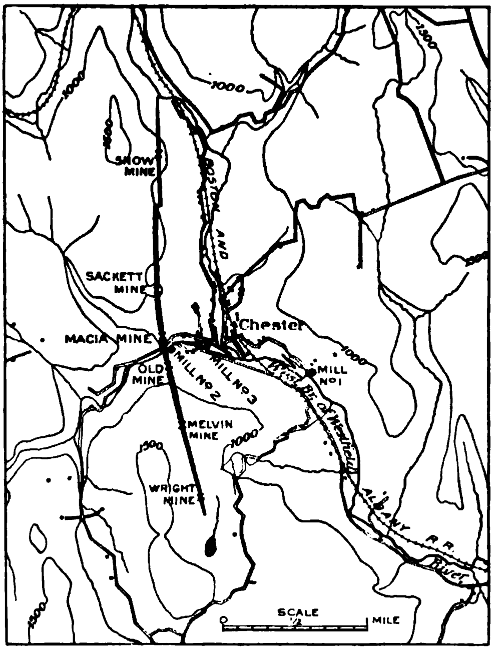


FIG. 13.- Map showing the location of the emery deposit at Chester, Mass.

North of Walker Brook and about 500 feet from the Old mine is the Macia mine, where a small amount of surface work has been done. Near the head of a small ravine a tunnel was started on the west of the vein to intercept it, but work was discontinued before the vein was reached.

The next opening is near the highest point of the vein on the eastern slope of Gobble (North) Mountain, about three-fourths of a mile north of the Macia mine, and is known as the Sackett mine. At this part of the vein there was a considerable quantity of magnetite that was practically free from corundum and was mined as an iron ore. This mine was worked very extensively over twenty years ago, but had been abandoned until 1899, when it was reopened. The old works were near the highest point of the vein, on the slope of the mountain, and were worked for about 30 feet. The new work was started 117 feet below the mine, and a tunnel from the east side was run 114 feet to the vein. When this was reached a shaft and tunnels were started. At this mine the corundum occurs in what might be called porphyritic crystals of a bronze color, which are from 5 to 15 mm. across. Here blue and white masses of corundum weighing several pounds have been found, and small, well-formed blue crystals are also frequent. A little north of this mine, in an old opening, a cross vein of chlorite was encountered which carried a great many almost perfect cubes of pyrite and radiating groups of black tourmaline.

The last opening on the vein where there has been any work is at the Snow mine, over a mile north of the Sackett mine. A small open cut was made that exposed the vein, 3 feet in width. Between these two mines and also from the Snow mine north to the river the vein can be followed almost continuously.

While the vein can be followed nearly the whole distance, the emery does not occur throughout its entire length, for it is

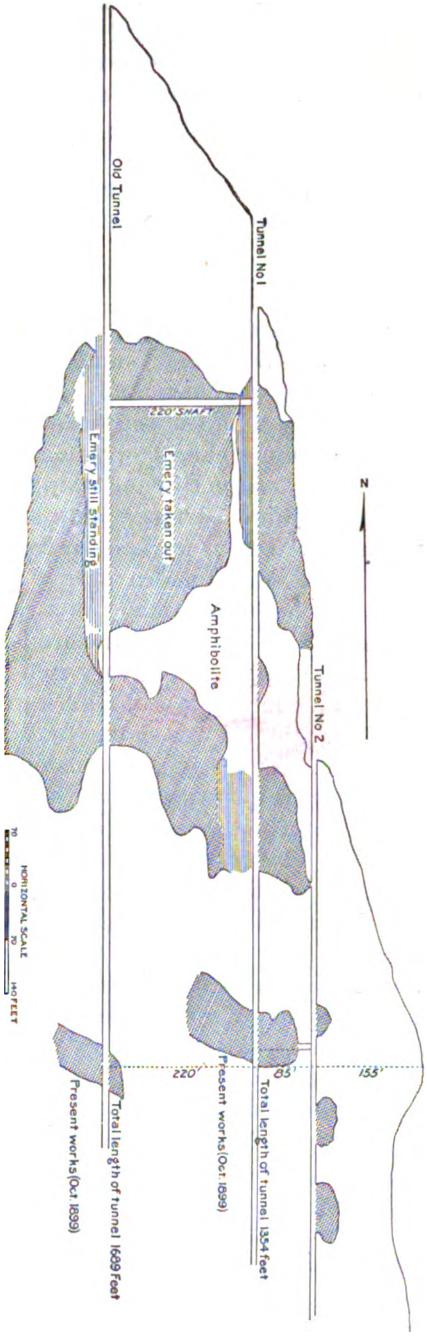


FIG. 14.—Cross section of the Old mine at Chester, Mass., showing the amount of emery taken out to April, 1899.

often in a series of pockets that are frequently connected with each other along the strike by a thin streak of chlorite and have a general dip in the vein of about N. 30°. In the direction of the dip, however, the emery is more or less continuous. The width of the vein varies from a few feet to 10 or 12, with an average width for the emery of about 6 feet. This is the most extensive deposit of emery known in this country.

Emery has also been discovered in the vicinity of Huntington, Mass., but no development work has as yet been done.

NEW YORK.

The emery deposits of this State occur associated with the norite rocks in Westchester County that have been described on page 26. Deposits of magnetite and emery have been found at a number of places 3 to 4 miles southeast of Peekskill. These deposits vary considerably in character, some being a nearly pure magnetite, others containing magnetite and spinel, and still others magnetite, spinel, and corundum. Those within a mile north and northeast of Crugers Station have been worked for iron ore, while those worked for emery are in the southeastern part of Cortland Township. The principal openings have been made on a ridge running north from Colabaugh Pond and it is here that the ore has been mined. While the iron ore and emery appear to be very rich it was found upon examination that there was more or less of a dark-green mineral mixed with magnetite, and this mineral was shown by Williams[1] to be the pleonaste variety of spinel. There is also considerable spinel in the emery, and even when this is quite abundant it can not be distinguished in the hand specimens from that in which there is almost none of this mineral.

At the emery deposits in the southeastern part of Cortland Township the percentage of corundum varies considerably at different openings, and it is sometimes observed in small blue, white, and colorless crystals. Associated with most of the corundum there is spinel, and considerable of the ore that has been mined for emery has contained little or no corundum and has been made up of magnetite and spinel. An ore of this sort would have most of the requisite properties of a true emery except the high degree of hardness due to the corundum; and when made up into a wheel it would not have the cutting efficiency of a true emery wheel. The spinel, which is 8 in hardness (corundum being 9), would play the same part in this ore as corundum in the true emery, and while not so hard as corundum it has the cutting qualities which would give the ore considerable value as an abrasive. For many purposes wheels made from this could be used fully as well as emery or corundum wheels and for some purposes they might be used to better advantage. The spinel would not interfere at all in the manufacture of a vitrified wheel.

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[1] Am. Jour. Sci., 3d series, Vol. XXXIII, 1882, p. 194.

Some of the ore that has been mined here carries a very high percentage of garnet.

The analyses that have been made of this ore all show a high percentage of alumina, which was to be expected, as the spinel is an alumina mineral, $(MgFe)O.Al_2O_3$, containing about 50 per cent of this oxide. An error is very often made in judging the percentage of corundum in an ore by calculating as corundum the total percentage of alumina obtained in a chemical analysis, which would represent, however, the alumina contained in all the aluminous mineral components of the ore.

Some of the ore at these mines is undoubtedly a true emery, but a considerable portion of it is a mixture of spinel and magnetite, which, while not a true emery, will make a useful abrasive. This whole ore body might be called a spinel-emery.

From what has been said regarding the occurrence of the emery in these Peekskill deposits, their pockety nature is what would be naturally expected and this has been characteristic of all the mining that has been done in this district.

The Jackson Mills Company, of Easton, Pa., is now the largest miner in this section. It has leased the emery deposits on the land of Isaac McCoy, 3 miles southeast of Peekskill. Its principal work is on the summit of a hill about one-half mile south of McCoy's house and consists of an open cut 40 to 50 feet deep, 40 feet long, and 12 to 20 feet wide. The emery ore is from 4 to 6 feet wide, but is broken up by bands of serpentine and chloritic rocks. In some of the ore the corundum is very distinct, occurring in elongated bluish white crystals up to 5 mm. long. This ore is very free from garnet.

Another deposit of emery has been encountered 50 feet below the summit, and still another 25 feet farther down. No mining has been done at either of these localities.

The ore is hauled by teams to Peekskill, where it is shipped by rail to Easton, Pa.

On a hill 1 mile east of the McCoy mine H. M. Quinn, of Philadelphia, Pa., has mined on the land of John H. Buckby. Pockets of emery were encountered on the summit of the hill and at a number of points on its western slope, but they soon pinched out. About 50 feet below the summit a face of rock 15 to 20 feet high and 40 feet across has been exposed. The only emery seen here is the remnant of a pocket.

As far as could be learned the emery deposits of the Tanite Company of Stroudsburg, Pa., are also leased. They are on the lands of Henry Heady, Oscar Dalton, and David Chase, and are for the most part similar to the deposits just mentioned. The ore on the land of Henry Heady is composed largely of garnet, and a considerable portion of it has been shipped by the Tanite Company to their mill at Stroudsburg.

NORTH CAROLINA.

While corundum has been known to occur in quantity in this State for over thirty years, emery has until recently only been known from one locality, and here the quantity was not apparently sufficient to be worthy of any development. This deposit has been described by Genth[1] as occurring at the McChristian place, 7 miles south of Friendship, Guilford County.

During the past few years emery has been found in Macon County in what appears to be considerable quantity. Nothing definite can be stated regarding the rock in which it occurs, as it is greatly decomposed as far as it has been exposed by the excavations. It does have, however, very much the appearance of a decomposed basic magnesian rock. There are a number of small outcrops of this saprolitic rock about 5 miles southwest of Franklin, the county seat, and emery in varying quantity occurs at all of them.

These outcrops, as far as could be judged, are isolated and in no way connected with one another. They are lenticular in form and but a few hundred feet wide, the longer axis being sometimes two or three times this. While the general direction of the strike of these outcrops is nearly the same, they are not in even an approximate line as regards one another. For nearly 15 miles south of these and following the valley of the Little Tennessee River small isolated outcrops of peridotite are numerous. The country rock through which these have forced their way is a hornblende-gneiss.

Considerable mining was done two years ago by Dr. H. S. Lucas, of Franklin, at the Fairview mine near North Skeener Gap, about a hundred tons of ore having been taken out and cleaned. The vein has been tapped at intervals for a distance of nearly 200 feet, good emery being encountered at each opening. All the work done was near the summit of Fairview Knob.

One mile N. 25° W. of the Fairview mine, on the southwest slopes of Dobson Mountain, another opening has been made for emery in an outcrop of the same rock on the land of J. A. Waldroop. A vein of emery ore was uncovered here that was 15 feet wide. No mining has been done here, all the work being in the nature of prospecting.

Emery has been found in similar outcrops on the lands of William Mann, three-fourths of a mile south, and of James Ledford, one and one-fourth miles S. 30° E. of the Fairview mine.

Preliminary fire tests were made upon the cleaned product of this ore, which proved it to be well adapted for use in the manufacture of the vitrified wheel.

METHODS OF MINING CORUNDUM.

In considering the methods used in mining corundum, it must be borne in mind that up to the present time it has been obtained in quantity only where it has been associated with peridotite rocks. These rocks, as will be shown later, present certain difficulties which, if not overcome, will cause considerable delay and danger in mining. The emery occurring in amphibolite presents these difficulties in only a slight degree.

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[1] Bull. U. S. Geol. Survey No. 74, 1891, p. 30.

Nearly all of the peridotite formations in which the corundum deposits occur are bold outcrops on the mountain sides and hilltops, having almost perfect natural drainage. At all the localities where there has been no mining the little prospecting has been usually by means of open cuts supplemented by tunnels. While at first mining by means of cuts may seem to be the most advantageous, it is soon found to be the cause of considerable extra expense. These cuts, or any other openings made over the surface of the peridotite, offer a much greater opportunity for surface water and frost to penetrate the mass of the rock formation. These rocks are more or less seamed or cracked, usually to the depth that alteration can extend, and thus offer opportunities for the infiltration of water. As most of the alteration products of this peridotite formation are slippery hydrous magnesium minerals, such as serpentine and talc, and as these are developed in the seams and cracks of the peridotite, anything that is done to disturb them will make them very liable to slip. At the Corundum Hill mine there are large masses of peridotite that have become loosened and gradually slipped down and closed up some of the tunnels, and there is constant danger that fragments of the rock will fall into the cuts and some of the tunnels. At the Laurel Creek mine, a mass of peridotite with soil, etc., nearly a 200-foot cube, has become loosened and slipped downward, effectually closing up the tunnel and shaft of the Big vein.

In mining corundum associated with peridotite rocks it is therefore advisable not to break the surface of the formation any more than is absolutely necessary and to do no work at all along the contact by means of open cuts, but to confine the mining to a system of tunnels and shafts. This method of mining will be found the cheapest in the end. Then, again, all the tunnels and shafts should be well timbered and the mine kept as thoroughly drained as possible.

A large amount of the material that must be handled is easily worked with pick and shovel, as it consists of the crystals and fragments of corundum in the zone of chlorite and vermiculite. In those veins in which the corundum is associated with feldspar, as at Laurel Creek and Buck Creek, and those where there is considerable amphibole or enstatite, as at Corundum Hill, blasting is necessary. Most of the corundum deposits in peridotite are so located that there need be but little hoisting of the ore for some time. By drifting from a shaft at the upper end of a tunnel that has been run into the vein at the lowest level possible the ore can be removed with a minimum of hoisting and the mine will be kept dry.

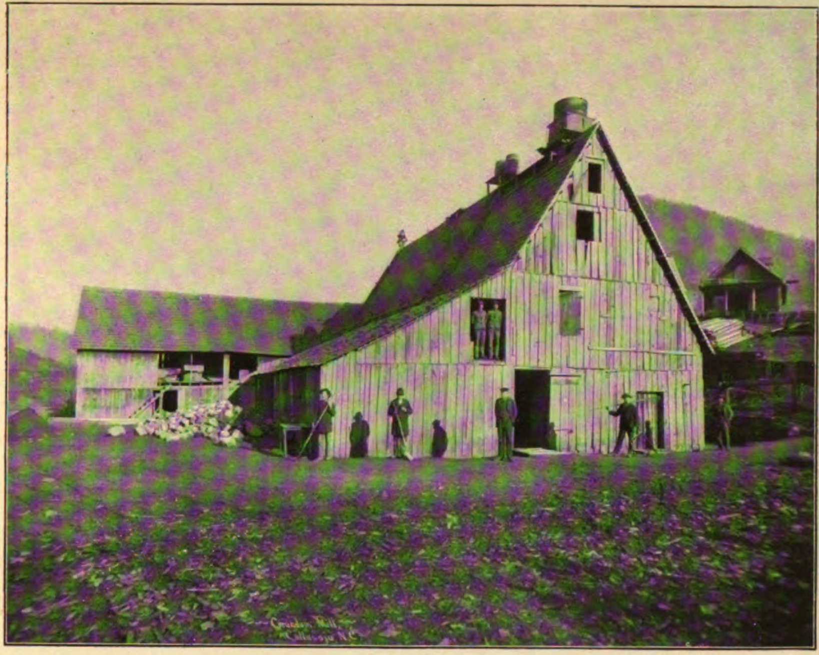
If the mill is located some distance from the mine and a line of sluice boxes can be built, the more or less finely divided ore may be carried to it by means of these. In this way the ore is partially cleaned by the time it reaches the mill. This is the method employed at the Corundum Hill mine.

Where the corundum occurs in a gneiss, quartz-schist, or syenite, there should be no difficulty in mining by means of open cuts.

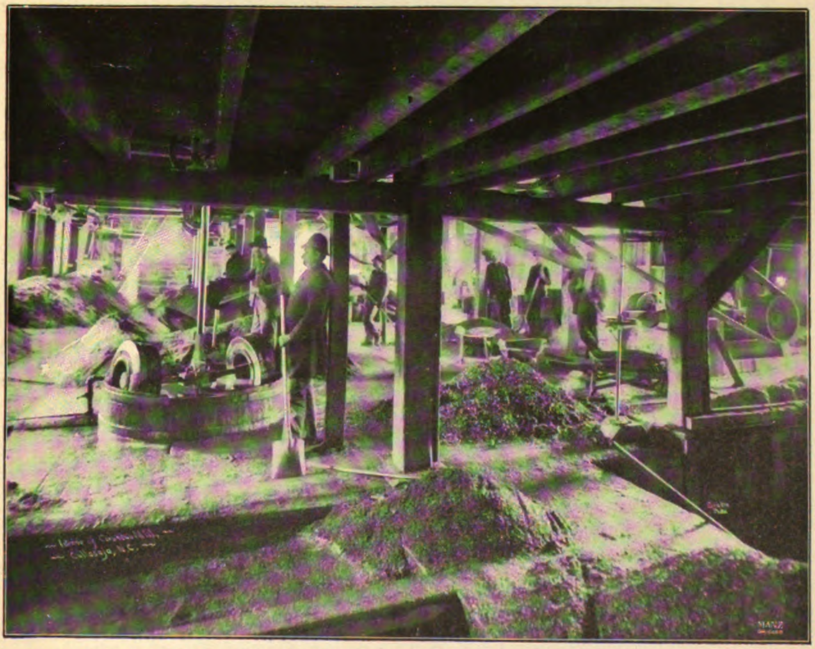
METHODS OF CLEANING CORUNDUM.

The difference between the commercial product and the ore as it comes from the mine is that the latter has been freed as far as possible of all impurities, so that the resulting product is or should be nearly pure corundum or emery. Most of the impurities are easily removed by conveying the crushed ore into boxes through which a stream of water runs, which is so regulated that the corundum readily settles to the bottom of the trough and the lighter minerals are carried off. Before this, however, the crushed ore is sieved, and all that will not pass through a No. 12 screen is recrushed and passed between rollers until it is reduced to the desired size. This washing process will remove only the impurities that are entirely separated from the particles of corundum, but there are usually some of the impurities attached to the particles or grains that have to be removed by another process. The product is passed through a machine known as the screw or scouring machine, in which there is a coarse worm similar to the screw conveyer. This grinds out almost all of the impurities, and these are separated by again subjecting them to the washing process. The final impurities are separated from the particles of corundum by means of a machine called the "muller" or "chaser" (see Pl. XIV). The principle of this is to cause each grain of corundum to rub against another and thus wear away the adhering foreign substances. The machine consists of a shallow tub, in which are two heavy wooden rollers which move around its circumference. The freshly ground corundum on being thrown into these tubs is kept constantly stirred up and then pressed down by the rollers being passed over it. In this way the scouring motion is kept up between the grains. The impurities are thus gradually worn away and are carried off by a stream of water that flows continually through the tub. The corundum in the tub is kept stirred up by men with hoes or by plow-shaped iron blades in front of the wooden rollers. It usually requires from four to eight hours, according to the nature of the impurities that are attached to the corundum grains, to obtain a clean product.

There are two methods of drying this product, by either of which it is removed from the mullers and allowed to lie overnight on inclined floors. By one method this product is conveyed by elevator belts to the second floor of the mill and dropped vertically for a distance of 20 to 30 feet down the stack of a furnace. At the bottom it strikes an



A. CORUNDUM MILL AT CULLASAGEE, MACON COUNTY, N. C.



B. INTERIOR VIEW OF CORUNDUM MILL AT CULLASAGEE, MACON COUNTY, N. C.

inclined surface that is just above the flames of the furnace and slides down this surface into an iron box. By the other method the wet product is thrown in at the upper end of an iron cylinder, open at both ends, which revolves about a coil of steam pipes. One end of the cylinder is lower than the other, and the wet mass is alternately carried up by the revolving cylinder and dropped on the hot coil of pipes, and so gradually worked toward the lower end, where it is caught in a hopper and conveyed by elevator belts to the sizing room. Here it is automatically screened to the various sizes.

On Pl. XIV, *A* and *B*, are views of the exterior and interior of the corundum mill at Cullasagee. In the foreground of *B* are the boxes in which the ore is first washed and just beyond these are the mullers.

Only within the last few years has any attempt been made to improve the methods of concentrating and cleaning corundum. There are now a number of companies that have installed complete concentrating mills, similar to those used in concentrating gold ores, but modified to suit corundum ore. While all are using jigs for the coarser sizes of the crushed ore, some are using Frue vanners and others Bartlett or Wifley tables for the finer sizes. This method works very satisfactorily for concentrating the corundum, and if, during the crushing and rolling of the ore, the corundum is largely separated from the associated minerals, a nearly cleaned product is obtained. It is necessary, however, to subject the larger part of the concentrates to some process similar to that performed by mullers, to free the grains of corundum from other minerals attached to them.

A new machine—the Hooper pneumatic concentrator—can also probably be used to advantage in concentrating corundum ores.

Any other minerals that will be likely to remain with the corundum in the concentrates, as garnet, pyrite, etc., can undoubtedly be separated by means of the Wetherill magnetic concentrator. Unless these minerals are unattached to the particles of corundum there will be a considerable loss of corundum by this separation.

USES OF CORUNDUM.

Corundum is used for only two general purposes, as gems and as an abrasive.

The varieties of corundum that are of value as gems have been described on page 39, and the many uses that are made of the cut stones in the jewelry trade are too well known to need more than a passing notice here. One use of the corundum gem that is perhaps worthy of notice is in supplying jewels for watches. In a recent notice from the Swiss agency of precious stones for watches, Aarburg, Switzerland, it said that 75,000,000 watch jewels are required annually. With the increase of production of gem corundum in this country a great deal of the smaller fragments could and should be utilized in the manufacture of watch jewels.

Both corundum and emery are used in the manufacture of abrasive materials, and these are on the market in three forms, as wheels and blocks of various shapes and sizes, as emery paper, and as grains or powder. The last two need no further explanation, but a description of the first is of importance.

The shapes of the corundum and emery wheels and bricks or stones are extremely varied, being adapted to all kinds of grinding. The principle of these wheels is the same as that of the rotary files, and as the points of a file become dull from using, so also do the grains or points of the emery and corundum in the wheel. In making a wheel it is necessary, therefore, to make it of such a temper or grade that when these grains become dull or rounded they will fall away or will be readily removed by a truing tool, leaving fresh, sharp grains exposed. The grade of a wheel depends upon the character of the work for which it is to be used, and the bond should be such that it will wear away a little faster than the corundum or emery, and thus always leave the sharp edges ready for cutting. The greatest economy is effected when the bond does not wear away until the grains of emery or corundum have become rounded or dulled, thus permitting the wheel to do its greatest amount of work.

Before leaving the factory all wheels should be thoroughly tested to a higher strain than that to which they are to be subjected in actual use; as the wheels have to be run at a very high velocity in order to secure the greatest efficiency, there is at times but little reserve strength, and a sudden blow will often cause them to fly to pieces.

To give an idea of the number of different wheels that the larger emery-wheel companies are prepared to make, I can not do better than to mention what I saw and what was told me at the Norton Emery Wheel Company, of Worcester, Mass. The wheels are manufactured for the special work for which they are intended, and vary in shape, in bond, and in grain of corundum. The sizes of corundum that are used are Nos. 12, 14, 16, 20, 24, 30, 36, 40, 50, 54, 60, 70, 80, 90, 100, 120, 150, 160, 180, 200, and 6 grades of flour corundum. The bond has 26 degrees of hardness, represented by the letters of the alphabet, although a bond is seldom used softer than E or harder than M. There are 408 different sizes of circular wheels, so that the different grades of wheels possible are almost unlimited.

There are three types of wheels known to the trade, the vitrified, chemical, and cement, the names being derived from the process by which they are manufactured. In the manufacture of all, the corundum or emery used is in grains of uniform size, but varies with the grade of wheel that is to be made. The vitrified wheel is the most important and most generally used, although for some work one of the others is preferable, and for very large wheels the chemical is especially adapted.

VITRIFIED WHEEL.

In the manufacture of this wheel more care is necessary in the selection of the corundum, for in the vitrifaction of the bond the foreign minerals containing water are very likely to cause the wheel to burst. The corundum grains are mixed thoroughly in a paste of prepared clay and other fluxes, and the mixture is then poured into paper molds and set aside in a drying room until hard enough to be readily handled. When the molds are sufficiently dry, they are subjected to a dressing or trimming process and shaped to approximate dimensions on a potter's wheel or shaving machine, and are then further dried.

The excess of mechanical water having evaporated, they are then ready for the kilns. The kilns are cone shaped and the inside measurements vary from 12 to 20 feet in height and 10 to 18 feet in diameter. When the kiln is filled the entrance is closed and sealed and the fires are started. The temperature is allowed to rise slowly, until all the water of mechanical admixture and of crystallization in the foreign materials is driven off, when the temperature is raised to about 3,000°, or to a white heat, this heating process requiring several days. Where the foreign minerals mixed with the corundum contain water of composition that is driven off only at a very high temperature, the wheels are apt to be broken by this water coming off when the temperature of the kiln is raised to the fusing point of the clay. The clay and other fluxes fuse and form a porcelain setting for each grain or fragment of corundum, which makes a very strong bond. The kilns are allowed to cool very slowly, several days being required for this. The kiln is then opened and the wheels are brought to a lathe, called the "truing machine," where they are turned to the exact dimensions desired, the hole is bushed to the exact size, and the wheel is then trued and balanced ready for shipping.

The heat necessary for the fusion in making the vitrified wheel apparently has no effect upon the corundum beyond a partial decolorization and the expulsion of the slight percentage of water in the corundum.

CHEMICAL WHEEL.

In this process, which is also called the silicate process, silicate of soda is used as the binding material. The silicate is thoroughly mixed with the emery or corundum and some drying material and tamped into molds. It is then subjected to an "oven" heat for twenty-four hours, after which it is removed and finished according to the method described above for the vitrified wheels after they are removed from the kilns. Wheels have been made by this process that were over 2,000 pounds in weight.

CEMENT WHEEL.

In the cement wheel, shellac, rubber, linseed oil, and other substances are used as the binding material. This makes a soft wheel that is well adapted for roll and surface grinding when made with shellac, and for saw gummers and thin wheels when made with oils.

Although an examination of a corundum property may show the existence of considerable quantity of the mineral, no mining should be undertaken until satisfactory tests have been made upon the corundum to prove that it has those properties that will make it of value as an abrasive.

The value of a corundum deposit as an ore for abrasive purposes depends upon that property of the mineral which enables it to retain a sharp edge, known as a cutting edge, when it is crushed to grains. All corundums do not have this property, and while many exhibit this in the first stage of the crushing, the finer fragments and grains do not. This is more apparent when the corundum has been made into a wheel, for when first used the wheel may do good work, especially if it is a coarse-grained wheel, but as it wears away, the grains of corundum become rounded, instead of breaking to a cutting edge. In estimating the value of a corundum deposit, it is therefore very essential to determine the abrasive qualities of the corundum. Neither a chemical analysis nor a superficial examination of a corundum ore will determine its cutting qualities, and this can be obtained only by making the corundum into a wheel and testing it.

In estimating the value of an ore it is also necessary to determine to what degree of purity it can be cleaned, or what percentage of the commercial product will be corundum, and also what will be the nature of the foreign minerals. A foreign mineral will always be softer than the corundum, and will to a certain extent reduce its abrasive power. Beyond this, the presence of a small amount of foreign mineral does not materially affect the value of the corundum for making a cement or chemical wheel, but is often the reason for discarding it in manufacturing a vitrified wheel, on account of the low fusibility of the foreign substance. Garnet is perhaps the most objectionable mineral in a corundum ore, it being very difficult to separate it from the corundum, because the specific gravity of the two is nearly the same. Corundum containing even a little of the garnet can not be used in the manufacture of the vitrified wheel.

OTHER USES.

An attempt has been made to use corundum as a source of aluminum, but on account of its refractoriness and the percentage of ferric oxide and silica that it often contains, and on account of the cost of the ore, this use has not been found feasible.

The late Mr. Alfred E. Hunt, of Pittsburg, Pa., made the following statement:[1]

> **The real difficulty which we find in the use of corundum for this manufacture is the cost of the raw material as compared with that of native bauxites. In this item we include not only the price of the corundum as it has been offered to us, but also the expense of grinding it to an impalpable powder, which must be done before it can be used directly in the manufacture of aluminum, and the cost of preliminary chemical treatment for purification—which latter operation, however, is also required for bauxite.**

Corundum has also been used as the source of the aluminum in the manufacture of aluminum-copper and aluminum-iron alloys. In the manufacture of these the corundum, without undergoing any previous treatment, was charged into an electric furnace with a mixture of carbon and copper or carbon and iron, according to whether aluminum bronze or ferro-aluminum was desired. Since 1890, however, when alumina began to be manufactured at a comparatively low price, this artificial oxide has been used in the place of the corundum.

CORUNDUM LOCALITIES IN THE UNITED STATES.

Under this head are included practically all the localities in the United States at which corundum has been found, and if they have been described under the heading "Distribution of corundum" they are simply mentioned here. Regarding the other localities, the mode of occurrence is given in most cases, and also some idea of the extent and character of the corundum.

This list is probably not complete, but it represents all those localities that I have visited and those of which an authenticated record could be obtained. It is taken up alphabetically by States.

ALABAMA.[2]

Dudleyville.—Between this town and Perry Mills, Tallapoosa County, corundum has been picked up at a number of places in the soil, but none has been found in place. Peridotite rocks have been found in the vicinity, and it is not at all improbable that the corundum was derived from these rocks.

Hanover.—Corundum has been found sparingly in Coosa County in the vicinity of this town.

CALIFORNIA.

Plumas County.—An interesting occurrence of corundum has recently been observed in the vicinity of Meadow Valley. Cutting the serpentine rocks of the eastern slope of Spanish Peak at an elevation of about 4,100 feet, and 1½ miles west-northwest of the Meadow Valley post-office, is a series of white coarse-grained dikes that are composed of 84 per cent of oligoclase and 16 per cent of corundum. The corundum is in crystals up to 2 inches in length and 1 inch in diameter, the general habit being pyramidal, and it is distributed rather irregularly through the groundmass of feldspar. This is a further illustration of the differentiation of a rock magma, supersaturated with alumina which has crystallized out as corundum. It is still uncertain whether these deposits of corundum will prove to be of commercial importance.[1]

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[1] Trans. Am. Ins. Min. Eng., Vol. XXVIII, 1898, p. 875.

[2] Geol. Survey Alabama, Report, 1875, p. 85.

COLORADO.

Chaffee County.—Corundum crystals have been found at the Calumet iron mines in the mica-schists at their contact with intrusive dikes of diorite. R. C. Hills, geologist to the Colorado Fuel and Iron Company, writes that the ore occurs in a band of rock 6 inches to 2 feet thick that has been followed for a distance of 500 feet, and that it averages 40 per cent of corundum.

CONNECTICUT.

Litchfield.—Corundum was found here associated with talc and pyrite in a mass of blue cyanite. Only surface specimens were found.

Norwich.—In the vicinity of this place corundum was found sparingly with sillimanite.

DELAWARE.

Corundum has been found in this State in the serpentine rocks near the Pennsylvania border. The only locality definitely known is near Chandlers Hollow, in Newcastle County, about 2½ miles south of Concord, Delaware County, Pa. It has been found only in small quantity.

GEORGIA.

Acworth.—Seven miles southwest of Acworth, Cobb County, there is a large peridotite formation which is entirely within Paulding County. From a pit sunk within this formation about 1,000 pounds of corundum were taken out. It is of poor quality, but makes handsome mineral specimens.

Bell Creek mine.—This mine is 4 miles north of Hiwassee, Towns County, and the corundum, mostly of a pink color, occurs in a peridotite. The work done consists of a pit 12 feet square by 12 feet deep. Only a small quantity of corundum was found.

Centralhatchee.—At this place, which is in Heard County, grayish, white, and blue corundum has been found in a matrix of hornblende, which is associated with basic magnesian rocks.

Douglas County.—Blue corundum in a pale greenish cyanite.

Foster mine.—The corundum occurs in quartz-schist. (See p. 60.)

Gainesville.—Beautiful specimens of red corundum have been found in the peridotite formation 1 mile east of Gainesville, Hall County.

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[1] A. C. Lawson: Am. Geologist, Vol. XXVII, 1901, p. 132; J. A. Edman, letters from.

Habersham County.—Corundum has been found as surface specimens at a number of localities in this county, and at one place in the peridotite formation. There have been no developments and there are no indications of any quantity.

Hamilton mine.—The corundum occurs in a peridotite formation about 5 miles north of Young Harris, Towns County. No large quantity has been found.

Hog Creek mine.—This mine is 2 miles a little south of west of Hiwassee, Towns County, but it lacks development. The corundum is associated with peridotite, and is pink, blue, and white.

Laurel Creek mine.—In peridotite. (See p. 63.)

Monroe.—Four and a half miles from Monroe, Walton County, on the farm of George W. Breedlove, black corundum has been found associated with peridotite rocks. Some little prospecting done here has been within the formation and some near the contact.

Pine Mountain, Rabun County.—In peridotite. (See p. 63.)

Porter Springs.—One mile southeast of this place (in Lumpkin County) corundum has been found in an amphibolite, but there is no quantity.

Powder Springs.—There is a considerable outcrop of peridotite in Cobb County, in the vicinity of Powder Springs, which offers a promising place for prospecting. A small vein has been opened on the W. B. Turner farm.

Rabun Gap.—Several pounds of corundum have been obtained from the Beavett mine; it occurs in a peridotite rock.

Teltonville.—One mile north of this town, in Forsyth County, surface specimens of corundum were found which evidently originated in the quartz-schists of this region.

Stone mine.—This mine, which is in the same general formation as the Track Rock mine (see p. 65), is in Rabun County. Only a little development has been undertaken and the prospect that the deposit may be valuable is not very favorable.

Thomaston.—Seven to 8 miles southwest of Thomaston, Upson County, considerable corundum has been found on the surface at the old Kelly farm. Some of the specimens of the corundum in the matrix indicate that it was derived from a mica-schist.

Track Rock mine.—In peridotite. (See p. 65.)

West Point.—A short distance northeast of this town (in Troup County) corundum has been found sparingly in a narrow strip of peridotite. Apparently no large quantity.

MARYLAND.

Corundum has been reported to occur in the vicinity of Whitehall, but no definite information can be obtained that any has been found here beyond a stray surface specimen.

MASSACHUSETTS.

Chester.—Emery in amphibolite. (See p. 67.)

Huntington.—Emery in amphibolite. (See p. 70.)

Pelham.—Corundum in saxonite. (See p. 19.)

MONTANA.

American Bar.—The lowest bar on the Missouri River on which sapphires have been found. (See p. 47.)

Cottonwood Creek.—In the gravels of this creek greenish-colored sapphires have been found. (See p. 51.)

Dana Bar.—A bar in the Missouri River, in the gravels of which sapphires have been found. (See p. 47.)

Eldorado Bar.—Sapphires in the gravel. (See p. 47.)

Emerald Bar.—The highest bar on the Missouri River in which sapphires have been found. (See p. 49.)

French Bar.—Sapphires have been found in a small dike of andesite. (See p. 47.)

Gallatin County.—Corundum in syenite. (See p. 66.)

Magpie Gulch.—Pale-greenish sapphires have been found in the gravel. (See p. 47.)

Metropolitan Bar.—Sapphires occur in the gravels. (See p. 49.)

Missouri River bars.—In the various bars along the Missouri River, 18 miles east and northeast of Helena, sapphires have been found in the gravel. (See p. 47.)

Rock Creek.--All colors of sapphires are found in the gravel of this creek. (See p. 50.)

Ruby Bar.—Sapphires occur in an andesite dike. (See p. 47.)

Spokane Bar.—A bar of the Missouri River where the most mining has been done for sapphires that occur in the gravels. (See p. 48.)

Yogo Gulch.—Blue sapphires occur in a dike of minette. (See p. 52.)

NEVADA.

Silver Peak.—Corundum has been reported from near this place.

NEW JERSEY.

Franklin Furnace.—A small pocket of corundum has been found here associated with dolomitic limestone.

Newton.—Blue and white corundum occurs in a whitish feldspar near the contact of the granitic rock and white limestone.

Vernon.—Small pockets of corundum in limestone, but not in great quantities. (See p. 36.)

NEW YORK.

Amity.—Blue and white corundum has been found in the limestone near Amity and Warwick, Orange County. Does not occur in large quantity.

Peekskill.—A short distance east of Peekskill emery is found in basic magnesian rocks in some quantity. (See p. 70.)

NORTH CAROLINA.

Acme mine.—This mine is located about three-quarters of a mile west of Statesville, Iredell County. The corundum occurs in crystals in an amphibolite.

Addie.—Crystals of corundum have been found sparingly associated with the peridotite rocks in the vicinity of Addie, Jackson County.

Bad Creek mine.—Corundum associated with peridotite. (See p. 62.)

Bakersville.—Corundum crystals have been found sparingly in the gneiss at William Bowmans, three-fourths of a mile west of Bakersville, Mitchell County.

Behr mine.—This mine is near Elf post-office, on Shooting Creek, Clay County. Pink and white corundum have been found associated with peridotite rocks.

Belts bridge.—Crystals of black corundum occur in an amphibolite 8 miles northwest of Statesville, Iredell County, on the Hunter farm.

Betts Gap.—Corundum in splendid grayish-white crystals that are translucent are found in the gneiss to the south of the gap in Jackson County. Garnet also occurs in the gneiss.

Blue Ridge properties.—Corundum occurs in gneiss. (See p. 59.)

Brockton mine.—Corundum occurs in the peridotite. (See p. 61.)

Buck Creek mine.—Also known as the Cullakeenee. Is in a peridotite formation. (See p. 58.)

Burnt Rock mine.—In a peridotite formation. (See p. 61.)

Caler Fork.—Ruby mine, the crystals being found in the gravels of the creek. (See p. 40.)

Caney Fork.—Two miles above the mouth of this creek, in Jackson County, corundum is found in the chlorite-schist in considerable quantity. At many points along this creek and its tributaries corundum has been found in the chlorite-schists and in gneiss near these schists, as at the mouth of and also 2 miles up Chastains Creek and on Shoal Creek Mountains on the West Fork.

Carpenters Knob.—Along the ridge leading northwest from Carpenters Knob, near the border of Burke, Cleveland, and Catawba counties, corundum in grayish-blue tapering crystals is found associated with garnetiferous gneisses and schists.

Carter mine.—Corundum occurs in a peridotite formation associated with spinel. Considerable work was done here ten years ago, but since then the mine has been idle. This locality offers a somewhat promising prospect.

Celos Ridge.—Corundum crystals 2 to 3 inches long have been found sparingly in the decomposed gneiss on this ridge 8 miles southeast of Burnsville, Yancey County.

Chastains Creek.—See above, under Caney Fork.

Chunky Gal Mountains.—Corundum has been found in the bands of quartz-schists and gneiss of which the Chunky Gal Mountains are composed. Garnet is associated with the corundum, which forms a very small percentage of the rock. This occurrence is described on page 34.

Collins mine.—Pink corundum in cyanite occurs at this mine near Statesville, Iredell County.

Corundum Hill mine.—The corundum at this mine occurs in a peridotite. (See p. 55.)

Cowee Valley.—Ruby and red corundum are found in the alluvial deposits of this valley, many of which are transparent. (See description of ruby mine, pp. 40–44.)

Coweeta.—Pink corundum is found in a greenish cyanite at this place, in Macon County.

Cullakeenee mine.—Same as the Buck Creek mine.

Cullasagee mine.—This is the same as the Corundum Hill mine.

Democrat.—Corundum has been found, sparingly associated with the peridotite rocks, a little to the south of this place, in Buncombe County.

Elf.—Beautiful specimens of pink corundum are found in the green amphibolite. Occasionally there are blue pieces in this rock.

Egypt mine.—This mine is located in Yancey County, 10 miles west of Burnsville, and the corundum is in a peridotite. It is in crystalline masses and distinct crystals of a white color, often mottled with blue. This occurrence is interesting as being the only one where corundum has been found surrounded directly by dunite.

Ellijay Creek.—Corundum has been found at many points in the valley of this creek, associated with peridotite rocks. The more important of these are the Mincey, Haskett, and Higdon mines.

Fairview mine.—At this mine emery occurs in basic magnesian rocks. (See p. 72.)

Fishhawk Mountain.—At an elevation of 4,000 feet on the western slope of this mountain, on Hickory Knoll Creek, in Macon County, corundum has been found sparingly in a small outcrop of dunite.

Foster mine.—Near the summit of Chunky Gal Mountains, near the headwaters of the northern fork of Shooting Creek, in Clay County, corundum occurs in peridotite. (See p. 60.)

Gaston County.—Blue corundum, associated with mica and quartz, has been found at Chubbs, Chrowders, and Kings mountains in this county. Emery also has been found at Chrowders Mountain.

Glenville.—Four miles north of this town, in Macon County, corundum occurs in chlorite-schist similar to that on Caney Fork.

Gray property.—Corundum in peridotite. (See p. 58.)

Grimshaw Gem mine.—Sapphires of various colors have been found at this mine in peridotite. It is near Montvale post-office, Jackson County. (See p. 45.)

Hampton mine.—Same as Mine Fork.

Haskett mine.—This is given under Ellijay Creek.

Herbert mine.—This mine is on Little Buck Creek, Clay County, and is in a long, narrow arm of peridotite extending out from the main mass of the Buck Creek peridotite formation. Some prospecting has been done here, and although corundum has been found, the main mass of it occurs in connection with the main mass of peridotite.

Higdon mine.—This mine was worked for a short time, and there is connected with it a mill for washing and cleaning the ore. (See Ellijay Creek, above.)

Isbel mine.—Corundum occurs sparingly in what may be a decomposed amphibolite. One of the largest washing and cleaning mills in the State is at this mine.

Kings Mountain.—See Gaston County.

Marshall.—Corundum has been found in large gray crystals half mile north of the mouth of Big Ivy River and 3 miles above Marshall, Madison County, on the surface of a large amphibolite outcrop. It is on the property of G. C. Haynie, of Marshall. It has also been found on the property of Hon. J. C. Pritchard near the same town.

McChristians place.—Emery of reddish-brown and grayish colors has been found at this place, which is 7 miles north of Friendship, Guilford County. The property lacks development. Surface specimens of corundum have also been found here.

Mincey mine.—The corundum at this mine is found in peridotite. (See p. 58.)

Mine Fork.—Emery, associated with staurolite.

Montvale.—At many of the peridotite formations in the vicinity of Montvale, Jackson County, corundum has been found. (See p. 45.)

Newfound Gap.—A little to the south of this gap, in Haywood County, red corundum has been found on the surface of a small mass of dunite.

Nona.—Corundum in distinct crystals has been found on the surface, in the vicinity of gneiss, at Nona, Macon County.

Owens Creek.—Crystals and grains of corundum have been found in bowlders of cyanite near the mouth of this creek, in Transylvania County.

Presley mine.—This mine is located 4 miles north of Canton, Haywood County. The corundum, of a blue and bluish-gray color, occurs in a pegmatitic dike.

Reed mine.—The corundum at this mine, which is 6 miles east of Franklin, Macon County, occurs in a saprolitic rock, and is in small prismatic crystals of a bluish color, some of which are nearly transparent.

Retreat.—Near Retreat post-office, in Haywood County, corundum has been found in limited quantity in small pegmatitic dikes in the gneiss.

Sapphire.—The mines in the vicinity of this town are described on page 61.

Sapphire mine.—The corundum occurs in peridotite. (See p. 61.)

Scaly Mountain.—The corundum occurs in quartz-schist. (See p. 60.)

Sheffield mine.—The corundum at this mine is in amphibole-schist. (See p. 58.)

Skeener Gap.—Emery is found here in a basic magnesian rock. (See p. 72.)

Shoups Ford.—At this place, in Burke County, corundum has been found associated with fibrolite.

Socrates mine.—One of the mines in the vicinity of Sapphire. Corundum occurs in peridotite. (See p. 62.)

Swannanoa Gap.—Float corundum has been found near an outcrop of peridotite.

Thumping Creek.—Corundum has been found in rough nodules and flat crystals in gneiss on the property of Curtis Ledford and C. C. Patterson, on this creek, Macon County.

Turkey Knob.—On the summit of this mountain, near the Macon-Jackson county line, corundum has been found sparingly in gneiss.

Waldroop mine.—Emery has been found in a basic magnesian rock. (See p. 72.)

Watagua mine.—Same as the Reed mine.

West Mills.—Red and ruby corundum have been found in the old gravel beds of the streams on the West farm, near West Mills, Macon County.

Whitewater mine.—The corundum is in peridotite. (See p. 63.)

Winston Salem.—Near this place, in Forsyth County, emery has been found similar to that at the McChristian place.

Yellow Mountain.—The gneisses of this section carry a small percentage of corundum. (See p. 60.)

PENNSYLVANIA.

Blackhorse.—Slender grayish crystals of corundum have been found at this place, which is near Media, Delaware County. This has been found inclosed by feldspar.

Fremont.—Near this place, in West Nottingham Township, Chester County, corundum crystals have been found, surrounded by feldspar.

Mineral Hill.—Corundum crystals have been found at this place, which is near Media, in Middletown Township, Delaware County, which were surrounded by feldspar similar to that at Blackhorse.

Newlin.—See under Unionville.

Shimerville.—At this place, in Lehigh County, corundum crystals up to 8 inches in length and 4½ inches in diameter have been found loose in the soil.

Unionville.—In a large mass of serpentine rocks, 1 mile northeast of this village, corundum has been found. (See p. 66.)

Villagegreen.—Large crystals of corundum of a brownish color are found near this village, in Aston Township, Delaware County.

West Chester—Corundum has been found in a serpentine of this township.

SOUTH CAROLINA.

Anderson County.—Corundum has been reported from this county, but none has been found in place.

Energy.—See York County.

Gaffney.—Corundum, usually of a gray color and in irregular masses up to 3 or 4 inches in diameter, has been found about 8 miles northwest of Gaffney, on the Island Ford road, near Maud post-office, on the Turner Phillips farm. It has not been found in situ, but in the gravels of a small stream and as loose fragments in the fields on the adjoining slopes. The fragments and what few crystals have been found are generally free from gangue, but some have been found with mica scales attached to them. It is not at all improbable that this corundum was derived from a mica-schist.

Laurens.—About 1¼ miles northeast of this town, in Laurens County, corundum has been found rather abundantly scattered over the surface. This surface corundum has been found for a number of miles to the southwest of this town. Although no corundum has been found in place, it was probably derived from a mica-schist, for the country rock in this section is largely a schist, and corundum crystals were found with portions of the mica-schist attached to them. The crystals are all rough, and vary from small ones to some that were over 3 inches long and 1 inch in diameter.

Oconee County.—Corundum has been found on the surface in this county, but none has been found in place.

York County.—In the northern part of this county, at Energy, near the North Carolina line, a black corundum has been found quite abundantly. (See p. 66.)

UTAH.

It is reported that a large deposit of corundum was found in this State during the past year, but no accurate information has been thus far obtained regarding location or quantity.

VIRGINIA.

Louisa County.—Deep blue crystals of corundum have been found in the soil in this county, but the exact locality is not known.

Stuart.—Corundum has been found in a mica-schist near this place on Bull Mountain. (See p. 35.) No development of the occurrence has been made to determine the extent of the deposit or the percentage of corundum.

ALASKA.[1]

Copper River.—Asteriated corundum of gray and pink colors is said to occur in a locality on Copper River, Alaska.

CORUNDUM LOCALITIES IN FOREIGN COUNTRIES.

With the exception of the emery deposits of Turkey and the Grecian Archipelago there were no localities outside of the United States where corundum had been mined for abrasive purposes until during the last year or two, when work was begun at the India deposits. As preparations are being made to work both these and the Canadian deposits on a large scale, it has seemed to me that a short description of them would be of interest and of value. I have also added a short description of the emery deposits of Turkey and the Grecian Archipelago.

CANADA.

The Canadian corundum localities that are attracting considerable attention at the present time are in the Province of Ontario, and have been recently described by Prof. W. G. Miller,[2] of the Kingston School of Mines. The corundum occurs as a primary constituent of a rock that is classified as a syenite and has been traced for over 50 miles across Renfrew, Hastings, and Haliburton counties, with smaller belts of the same rock in Peterborough, Lanark, and Frontenac counties to the south, making a total distance of nearly 100 miles in which the corundum-bearing rock has been found.

The rock varies from a normal syenite to a nepheline-syenite and a mica-syenite. Corundum has been found in all three of these varieties, but is more abundant in the normal syenite, and this rock has been named corundum-syenite. These rocks, which occur as dikes cutting through the gneisses, are sometimes in large masses that appear to grade into a granite. The width of the dikes varies greatly, but is usually several feet; a few have been observed that were only a few inches wide. These dikes are sometimes thickly studded with corundum crystals. Assays made of this rock from various parts of the dikes indicate that it will average about 12 per cent of corundum. If the corundum can be mined economically, and if tests of the commercial corundum obtained from the ore show that it has the abrasive qualities essential to make it of use in the manufacture of vitrified wheels, these deposits should become of considerable importance.

The Canada Corundum Company, Limited, has been organized and has begun mining operations on the corundum deposits in the extreme northwestern part of Raglan Township, Renfrew County, Ontario, about 7 miles southwest of Combermere. The corundum here occurs in the normal syenite. A corundum mill has been erected that will have a capacity of 5 tons of cleaned corundum a day.

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[1] Twentieth Ann. Rept. U. S. Geol. Survey, Part VI, 1899, p. 570.

[2] Report Bureau of Mines, Toronto, Can., Vol. VIII, Part II, 1899, pp. 205-240.

This company also owns corundum deposits on the York River in Carlow and Dungannon townships, Hastings County. At these localities the corundum occurs in a nepheline-syenite, and while it is apparently of superior quality to that found in Raglan Township, the percentage of corundum is not as high. No mining is being done by the company at these York River localities.

The manager of the company is Mr. B. A. C. Craig, of Toronto, Canada.

Miller[1] has described specimens of corundum from Methuen Township, Peterborough County, that are entirely inclosed by mica. He says: "The corundum is often not observed in the mica until the latter is broken open, when it is found forming the center or core of the mass. The rounded surfaces of the corundum and other characteristics leads to the belief that the masses of light-colored mica are secondary products after corundum." This very closely resembles specimens of corundum surrounded by muscovite mica that have been found at the Presley mine in Haywood County, N. C. (see p. 85), in which the muscovite is undoubtedly a secondary product after the corundum.

In the township of South Sherbrooke, Lanark County,[2] corundum has been found in a rock that is made up of a basic plagioclase feldspar and green hornblende, and has been called anorthosite by Miller. It is more basic in character than the typical varieties of this rock that have been described from other parts of Canada. The width of the belt of rock is nearly three-quarters of a mile and the corundum is found throughout the whole distance. It occurs in crystals of an almost uniform light-gray to white color that are usually about half an inch in diameter, the largest ones being one and a quarter inches long.

INDIA.

The corundum deposits of India have been described by T. H. Holland.[3] He gives the Pararapatti area in the Salem district of the province of Upper Burma as one of the most promising for the mining of corundum for abrasive purposes. He describes the corundum as occuring in a matrix of deep flesh-colored feldspar which is in bands or lenticular masses, and has associated with it often a considerable proportion of sillimanite, rutile, opaque black and green spinel, and biotite. These masses, where they have been actually seen in the rock, are sometimes as much as 15 feet long and 8 feet in diameter. The feldspar rock is composed essentially of anorthite and hornblende, and in parts has a gneissoid structure, and these portions carry the corundum. The corundum varies from a deep purplish brown to a dark greenish gray, and is in irregular nodules varying from a quarter of an inch to an inch in diameter and in elongated barrel-shaped crystals sometimes an inch long.

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[1] Report Bureau of Mines, Toronto, Ontario, Vol. VIII, Part II, 1899, p. 210.

[2] Loc cit., p. 25.

[3] Geology of India, Part III, Economic Geology, and Report Bureau of Mines, Vol. VIII, Part II, 1899, p. 230.

There are two and perhaps more of these corundum-bearing bands that are parallel to each other, making the total length of corundum-bearing rock that is known over 24 miles. The percentage of corundum in the rock is very low, experiments that have been made on samples taken at different points on the band showing the presence of only 3.5 per cent.

Most of the outcrops of the bands of corundum rock have been found in connection with gneiss, and lie in lines that are roughly parallel to the strike of the gneiss. Some of them are, however, in close proximity to a nepheline-syenite.

Specimens of corundum sent by Dr. T. L. Walker from a district about 250 miles north of Calcutta and labeled Pipra, South Rewah, India, are apparently similar to those described by Holland. The corundum is very fine grained in appearance and in nodules up to 2 or more inches long by 1 or more inches broad, with a pinkish to purplish-brown color. These nodules are partially or completely surrounded by a greenish mica, whose folia are small and rather brittle, and which has been referred by Mallet[1] to the euphyllite variety. In the mica there are small rough crystals of tourmaline. Just what the occurrence of this corundum is I do not know, but from the general appearance of the specimens it should make an ore from which the corundum could be readily separated and a very clean product obtained. If the corundum in the rock was 10 to 15 per cent of the amount required to be removed in mining, this should make a very important and profitable corundum deposit. A limited amount of this corundum is now being imported by the Norton Emery Wheel Company, of Worcester, Mass., and is used in the manufacture of their India oilstones.

In other specimens labeled Salbanni, 4 miles east southeast of Barampur, Manbhoorn district, India, there are blue crystals of corundum with a rough hexagonal prism embedded in a mass of interlocking bladed crystals of cyanite.

It is very probable that nearly all of the corundum deposits that are known in India are secondary minerals and the result of metamorphism. Professor Judd, in his paper on the Rubies of Burma and associated Minerals,[2] says that all the corundum-bearing rocks in the districts of Southern Asia appear to be gneisses that sometimes pass into schists and frequently contain masses of limestone and dolomite.

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[1] Min. India, 1887, p. 130, and Dana's Min., 6th edition, 1892, p. 624.

[2] Trans. Royal Soc., London, 1896, p. 191.

TURKEY.

The Turkish emery is obtained from the province or vilayet of Aidin, in Asia Minor, which embraces nearly the entire basins of the rivers Sarabat and Mender. Smyrna is the principal town of the province, and is the center of trade for all the surrounding district and islands. The deposits that are now being worked are on the Gumush Dagh Mountain and on the slopes of Ak Sivri,[1] which is a mountain about 125 miles to the south. The former of these deposits is about 12 miles east of the ruins of Ephesus, and just north of the river Mender; the latter is in what J. Lawrence Smith[2] describes as the Kulah district, and it is much more inaccessible than the former one. Emery has also been found in small quantities near Adula, a town about 12 or 15 miles east of Kulah, and also at Manser, about 24 miles north, and at Allahinan-Bourgs, about 20 miles south of Smyrna.

The occurrence of the emery at all these localities is very similar, it being embedded in a bluish, coarse-grained to compact marble or limestone, resting upon mica-slates, schists, and gneisses. It always occurs in the limestone or marble; not even a trace has as yet been found in the other rocks. It does not occur in a well-defined vein but in pockets scattered irregularly through the rock that are sometimes up to 200 feet in length and 300 feet in width. The walls of these pockets are very irregular, as the limestone intrudes upon them, and then recedes very suddenly.

GRECIAN ARCHIPELAGO.

In a number of the islands of this archipelago, emery has been found in considerable quantity. The most important of these localities is the island of Naxos, where the emery is found in large blocks more or less mixed with the red soil, and also embedded in white marble. The deposits are located principally on the north and east sides of the island, the best ore being obtained from Vothrie, which is 9 miles from the coast. Another one of the better deposits on this island is at Apperonthos, which is 7 miles from the coast. In the southern part of the island the emery is found near Yasso. It occurs in such abundance on the island, in loose bowlders and in the soil, that there has been little need to mine it in the hard rock.

On the island of Nicaria emery has been found in quality equal to that from Naxos, but the quantity is not so great. A little was also found on the island of Samos. In all these islands the emery occurs in a limestone.

OTHER LOCALITIES.

Corundum has been found sparingly at many other localities, but thus far it has not been found in quantity enough to make the occurrences of economic importance as an abrasive.

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[1] Trans. Am. Inst. Min. Eng., Vol. XXVIII, 1898, p. 206.

[2] Am. Jour. Sci., 2d series, Vol. X, 1850, p. 357.

The occurrence of sapphire corundum in Burma, Ceylon, and Siam has been mentioned on pages 39 and 46.

Zirkel,[1] mentions the occurrence of corundum as an accessory mineral in the amphibolites of northwestern Austrian Silesia; in the chlorite-schist of Nischne-Issetsk, in the Urals; as a contact product of the diorites of Klausen, in Tyrol; in the andesite and tonalite of the Eifel; in a contact product of quartz-mica-diorite on quartz-phyllite in Val Moja, and similarly in the kersantite of Michaelstein, Harz; also in the graphite of Mühldorf, near Spitz, in Lower Austria.

Pirsson[2] has mentioned the occurrence of corundum in small blue sapphires in the fresh basalt of Unkel on the Rhine and Steinheim near Frankfort on the Main.

Morozewicz[3] has described the occurrences of corundum in Russia, the chief of which is in a rock composed essentially of anorthite and corundum, together with spinel and biotite. He claims that this is a new type of alumino-silicate rock, and calls it "kyschtymit." Other rocks in the Urals that contain corundum are made up almost exclusively of this mineral and orthoclase; some of these are coarse grained, while others are fine. The coarse ones have been called corundum-pegmatite and the finer ones corundum-syenite. These rocks occur as dikes cutting through gneiss.

It may be that when these corundum-bearing rocks of the Urals have been more specially examined as to their economic value they may be found to contain a large enough percentage of corundum to make them of importance as an ore of this mineral.

Dana[4] mentions the occurrence of corundum near Canton, China; in Bohemia, near Petschau; at Saint Gotthard, in dolomite; near Mozzo, in Piedmont, in white compact feldspar; and at Mudgee, New South Wales.

Lacroix, in a paper[5] on the metamorphic and eruptive rocks of Ariège, France, mentions the occurrence of corundum in the marbles of Mercus and Arignac. In a second paper[6] on acid inclusions in the volcanic rocks of the Auvergne, France, corundum is said to occur frequently in the granites and gneisses of this section. He has also described the occurrence of this mineral in the basic magmas (basalts, trachytes, and andesites) in Haute-Loire, France.[7]

Salomon[8] has described the occurrence of corundum in phyllites, epidote-amphibolites, and mica-schists at Mount Aviólo, in the Southern Alps. It occurs but sparingly in these rocks.

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[1] Lehrbuch der Petrographie, Leipsic, 1893, p. 461.

[2] Am. Jour. Sci., 4th series, Vol. IV, 1897, p. 422.

[3] Tschermaks Min. und Pet. Mitt., Vol. XVIII, pt. 1; and Rept. Bureau of Mines, Toronto, Vol. VIII, Part II, 1899, p. 285.

[4] Min., 6th edition, 1892, p. 212.

[5] Bull. des Serv. d. l. Carte géol. d. France, No. 11, Vol. II; and Am. Nat., Feb., 1891, pp. 138-139.

[6] Loc. cit.

[7] Bull. Soc. Min, Vol. XIII., 1890, pp. 100-106.

[8] Jour. d. d. G. G., Vol. XLII., 1890, p. 450; and Am. Nat., 1891, pp. 571, 572.

In the dune sands on the west coast of Holland, at Sheveningen near the Hague, corundum has been found by Retgers[1] to be one of its constituents.

In describing the geology of the district around Pretoria, South Africa, Molengraaf[2] states that the oldest rocks of the region are granites and crystalline schists. Above these are another series of schist formations, comprising quartzites, clay slates, corundum schists, porphyroids, and chiastolite-schists that are cut by diabase dikes. He states that the corundum porphyroid resembles a feldspar porphyry, and that the corundum occurs in large individuals in a groundmass of quartz and chlorite. From the description given, there is a possibility that there is corundum in quantity in this district.

In many parts of the western Yunnan district, China, as in the prefecture of Shunning Fu, sapphire, ruby, and emerald corundum are said to occur.[3]

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[1] Rec. des travaux chimiques des Pays-Bas, Vol. XI, 1892, p. 169; and Am. Nat., 1893, p. 382.

[2] Neues Jahrbuch, Vol. IX, 1894-95, pp. 174-291; and Am. Nat., 1895, p. 470.

[3] U. S. Consular Reports, Jan., 1900, Vol. LXII, No. 232, p. 95; reprinted from Mesny's Chinese Miscellany, published at Shanghai, China.

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PUBLICATIONS OF UNITED STATES GEOLOGICAL SURVEY.

[Bulletin No. 180.]

The serial publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Bulletins, (4) Mineral Resources, (5) Water-supply and Irrigation Papers, (6) Topographic Atlas of United States—folios and separate sheets thereof, (7) Geologic Atlas of United States—folios thereof. A circular giving complete lists may be had on application.

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DEPARTMENT OF THE INTERIOR

BULLETIN

OF THE

UNITED STATES

GEOLOGICAL SURVEY

No. 181

SERIES F, GEOGRAPHY, 24

WASHINGTON
GOVERNMENT PRINTING OFFICE
1901

Geographic positions between Warrensville triangulation station, United States Lake Survey, and Bedford, via highways.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Warrensville triangulation station	41 28 39.24	81 30 12.8
Randall station, Erie Rwy., about one-fourth mile west of, road crossing near post-office	41 25 42.6	81 32 12.0
Bedford station, Cleveland and Pittsburg Rwy	41 23 24.1	81 32 09.8

Geographic positions along Cleveland and Pittsburg Railway, between Bedford and Kensington.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Macedonia station	41 18 48.3	81 30 37.3
Hudson, Western Reserve Academy Observatory	41 15 37.6	81 26 14.9
Portage and Summit, county line	41 12 45.3	81 23 33.2
Earlville station	41 11 21.0	81 20 42.8
Erie Rwy. crossing	41 10 18.4	81 18 40.7
Ravenna, Main street crossing	41 09 28.0	81 14 52.5
Ravenna, Pittsburg and Western Rwy. crossing	41 08 56.4	81 14 44.6
Rootstown station, road crossing 150 feet north of	41 06 18.4	81 12 52.7
Road crossing 15 feet south of milepost 45	41 04 38.2	81 11 40.5
Road crossing 655 feet north of milepost 48	41 02 21.2	81 10 20.6
Atwater station road crossing 295 feet south of	41 01 25.4	81 09 50.8
Portage and Stark counties, road crossing on county line	40 59 17.4	81 08 41.2
Road crossing 1,695 feet south of milepost 55	40 56 27.5	81 06 57.0
Alliance, Alliance and Northern Rwy. crossing	40 55 33.0	81 06 04.4
Alliance, Pittsburg, Fort Wayne and Chicago crossing	40 55 18.6	81 05 45.0
Alliance station	40 55 17.1	81 05 43.2
Stark and Mahoning counties, road crossing on county line	40 54 44.1	81 05 13.8
Road crossing 1,070 feet north of milepost 61	40 52 20.4	81 04 08.3
Homeworth station, road crossing 55 feet south of	40 50 14.8	81 04 04.4
Moultrie station, road crossing 255 feet south of	40 47 47.8	81 04 14.3
Bayard station	40 45 02.7	81 03 58.4
East Rochester station, road crossing 700 feet east of	40 44 41.8	81 02 06.3
Hanover-West township line	40 44 00.5	80 58 32.2
Kensington station, road crossing 150 feet west of	40 44 05.3	80 57 23.3
Kensington triangulation station	40 43 20.6	80 56 40.5

Geographic positions along Cleveland, Akron and Columbus Railway, Hudson to Akron.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Flag station, road crossing at, 1,770 feet south of milepost 3	41 11 52.4	81 27 53.8
Road crossing 1,370 feet north of milepost 6	41 09 50.3	81 28 10.8
Cuyahoga Falls station	41 08 06.9	81 28 52.0
Road crossing 1,925 feet south of milepost 10	41 06 08.1	81 29 23.0
Cleveland, Terminal and Valley Rwy. crossing, stone arch	41 05 08.5	81 29 24.3
Akron, Union station	41 04 58.7	81 30 34.8
Akron, court-house grounds, south meridian mark	41 04 44.3	81 31 05.0
Akron, court-house grounds, north meridian mark	41 04 47.8	81 31 05.0

Geographic positions along Erie Railway, Akron to Burbank.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Akron, Erie station, 2¼ miles west of, old canal crossing	41 02 46.1	81 32 35.7
Road crossing (Baltimore and Ohio Rwy.), 2,200 feet southwest of milepost 18	41 01 56.4	81 34 52.1
Barberton station	41 01 13.2	81 36 36.5
Sherman station	41 00 50.4	81 40 05.0
Wadsworth station	41 01 02.7	81 43 46.6
Road crossing one-half mile west of milepost 217	40 59 46.5	81 44 55.5
Rittman station	40 58 06.4	81 46 55.2
Sterling; Cleveland, Lorain and Wheeling crossing	40 58 10.9	81 50 52.7
Creston station	40 58 56.6	81 53 33.2
Road crossing 370 feet east of water tank	40 59 22.8	81 57 30.2
Burbank station	40 59 24.2	81 59 50.1
Baltimore and Ohio crossing (Lodi and Wooster branch)	40 59 19.4	82 01 33.7

Geographic positions along Cleveland, Lorain and Wheeling Railway, from Sterling to Grafton triangulation station (United States Lake Survey).

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Sterling, Erie Rwy. crossing	40 58 10.9	81 44 55.5
Seville station	41 00 30.5	81 51 50.5
Road crossing 2,340 feet south of milepost 39	41 02 39.8	81 53 04.0
Flag station 400 feet south of milepost 37	41 04 37.6	81 53 39.8
Road crossing 250 feet north of milepost 34	41 07 16.1	81 53 03.3
Medina station	41 08 18.8	81 52 24.3
Road crossing 2,150 feet south of milepost 29	41 10 01.9	81 55 13.2
Lester station	41 10 48.2	81 56 31.5
Erhart station	41 11 55.2	81 58 21.1
Grafton triangulation station (United States Lake Survey)	41 12 44.21	81 59 37.85

Geographic positions along Lodi and Wooster branch of Baltimore and Ohio Railroad, from Erie crossing to Wooster.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Erie crossing	40 59 19.4	82 01 33.7
Road crossing at flag station	40 57 08.3	82 01 27.7
Armstrong flag station	40 54 42.0	82 00 34.0
Overton flag station	40 51 51.0	82 00 32.3
Road crossing 600 feet south of water tank	40 48 38.1	81 58 51.0
Wooster fair grounds, south meridian mark	40 47 50.3	81 57 03.5
Wooster fair grounds, north meridian mark	40 47 55.6	81 57 03.5
Wooster station, Baltimore and Ohio R. R	40 47 43.6	81 56 55.1

Geographic positions along Pittsburg, Fort Wayne and Chicago Railway, from Millbrook to Orrville.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Bridge 121, northwest corner of, copper bolt in bridge abutment	40 43 59.9	81 58 24.6
Road crossing 100 feet east of bridge 121	40 44 00.7	81 58 23.8
Overhead road crossing	40 44 51.8	81 57 41.4
Baltimore and Ohio overhead crossing	40 46 32.6	81 56 47.7
Wooster station	40 47 57.0	81 55 54.8
Stone arch culvert 1,040 feet north of milepost 132	40 49 09.8	81 53 19.6
Smithville station	40 50 25.5	81 51 40.9
Road crossing about one-third mile east of water tank	40 49 46.0	81 48 35.0
Orrville, Pittsburg, Fort Wayne and Chicago and Cleveland, Akron and Columbus Rwy	40 50 22.1	81 46 05.8

Geographic positions along Wheeling and Lake Erie Railway, between Orrville and Massillon.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Burton City station	40 50 36.5	81 42 12.1
Dalton station	40 48 02.0	81 41 15.2
Pocock mine junction	40 48 20.7	81 38 43.9
Sippo station, road crossing 325 feet west of	40 48 56.4	81 36 05.9
Sherwood flag station, road crossing at	40 48 19.8	81 33 17.9
Massillon, crossing of Wheeling and Lake Erie and Cleveland, Lorain and Wheeling Rwys	40 47 43.5	81 31 47.3

Geographic positions along Pittsburg, Fort Wayne and Chicago Railway, between Massillon and Canton.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Massillon, East street crossing	40 47 32.4	81 31 01.2
Road crossing 2,150 feet east of milepost 107	40 47 11.6	81 27 57.6
Road crossing 700 feet west of milepost 104	40 46 54.1	81 25 11.8
Canton, Pittsburg, Fort Wayne and Chicago Rwy. and Cleveland Terminal and Valley Rwy. crossing	40 47 24.2	81 23 02.1

Geographic positions along the Cleveland Terminal and Valley Railway, between Canton and Akron.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Canton station	40 48 01.5	81 23 16.1
Road crossing 1,525 feet south of milepost 54	40 51 16.8	81 24 49.2
New Berlin station, road crossing 65 feet north of	40 52 54.0	81 25 32.3
Greentown station, road crossing 245 feet north of	40 55 42.5	81 25 10.8
Myersville station, road crossing 215 feet north of	40 58 34.0	81 25 36.7
Road crossing 280 feet north of milepost 44	40 59 41.9	81 26 44.5
Krumroy station, road crossing 225 feet south of	41 00 55.3	81 28 42.8
Overhead road crossing 425 feet south of milepost 39	41 03 07.2	81 28 37.0

Geographic positions along Wheeling and Lake Erie Railway, between Canton and Minerva.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Canton, crossing of Pittsburg, Fort Wayne and Chicago Rwy	40 47 43.3	81 22 07.3
Road crossing 1,826 feet west of milepost 63	40 46 26.4	81 19 17.9
Osnaburg station road crossing, 425 feet east of	40 47 03.7	81 16 59.6
Road crossing 1,650 feet east of milepost 67	40 45 58.0	81 14 51.9
Robertsville station, road crossing 90 feet west of	40 45 38.9	81 11 21.6
Road crossing 180 feet south of milepost 73	40 44 54.2	81 09 24.0
Road crossing 450 feet south of milepost 75	40 43 09.5	81 09 11.8
Minerva, crossing of Cleveland and Pittsburg Rwy. (new Philadelphia branch) along Cleveland and Pittsburg Rwy	40 43 31.5	81 06 26.2
Minerva station, Cleveland and Pittsburg Rwy., road crossing, about 2,200 feet northeast of	40 43 40.3	81 06 09.9

Geographic positions along highway from Ravenna northward to Claridon triangulation station (United States Lake Survey).

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Shalersville, 2½ miles south of, 4 corners	41 12 07.4	81 14 47.1
Shalersville, intersection of roads at	41 14 19.8	81 13 53.6
Mantua station, Erie Railway crossing near	41 16 52.8	81 13 28.8
Mantua post-office, road intersection at	41 18 37.3	81 13 19.2
Julia post-office, county line between Portage and Geauga County	41 20 50.8	81 13 27.3
Auburn, road intersection at store	41 23 14.0	81 13 00.2
South Newbury post-office, 2,000 feet south of, and ½ mile south of creamery, electric railway crossing	41 25 58.4	81 12 32.9
Burton, 2¾ miles southeast of, 4 corners	41 26 59.7	81 10 53.4
Burton, street intersection, north side of park	41 28 21.4	81 08 43.9
Burton, about 1¾ miles north of, 4 corners	41 29 49.5	81 08 43.8
Claridon triangulation station (U. S. Lake Survey)	41 30 39.61	81 07 06.27

Meridian Marks.

CANTON, STARK COUNTY, OHIO.

Location of station: On the Stark County fair grounds at Canton.

Station mark: A marble post 40 by 6 by 8 inches, set 36 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. It is 25 feet north of inside fence at south end of race track.

Reference mark: Center of judges' stand, 390.6 feet distant; true azimuth, 148° 01′ 30″.

Distant mark: A marble post 40 by 6 by 8 inches, set 36 inches in the ground, in the center of top of which is a bronze meridian tablet. It is 765 feet north of the station mark and 283 feet south of inside fence at north end of race track.

Center of judges' stand, 480½ feet distant; true azimuth, 25° 30′ 00″.

Resident referee: Mr. John S. Hoover, county surveyor.

ST. CLAIRSVILLE, BELMONT COUNTY, OHIO.

Location of station: Within the Belmont County Agricultural Society fair grounds.

Station mark: A sandstone post 40 by 12 by 20 inches set 40 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

Distant mark: North of station 400 feet, a sandstone post 72 by 12 by 20 inches set 40 inches in the ground, in the center of top of which is cemented a bronze triangulation tablet.

WOOSTER, WAYNE COUNTY, OHIO.

Location of station: On the Wayne County fair grounds.

Station mark: A marble post 36 by 6 by 9 inches set 34 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

Reference marks: Center of judges' stand, 129 feet distant; true azimuth, 181° 31′; tree, 426 feet distant; azimuth, 104° 00′.

Distant mark: 539.4 feet north of station mark, 40 feet from inside edge of race track, a marble post 36 by 6 by 9 inches set 34 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

Reference marks: Center of judges' stand, 413 feet distant; true azimuth, 356° 25′; tree, 601 feet distant; azimuth, 43° 25′.

Resident referee: County surveyor.

NORTH CAROLINA.

Primary Traverse.

The following geographic positions were determined by primary railroad traverse by Mr. Oscar Jones, assistant topographer, in September and October, 1900. The line begins at the Episcopal Church spire at Newbern (located by the United States Coast and Geodetic Survey), and follows the Atlantic and North Carolina Railroad to Goldsboro; thence along the Atlantic Coast Line Railroad via Rockymount and Parmele to Washington, connecting with Cedar Grove triangulation station of the United States Coast and Geodetic Survey. A spur line was run from Parmele to Plymouth.

Geographic positions along Atlantic and North Carolina Railroad between Newbern and Goldsboro.

Stations.	Latitude.	Longitude
	° ′ ″	° ′ ″
Newbern, Episcopal Church spire, United States Coast and Geodetic Survey	35 06 25.04	77 02 21.98
Newbern, national pike crossing	35 07 01.0	77 02 47.7
Road crossing 1,470 feet east of milepost 40	35 07 45.9	77 05 44.1
Clark post-office and sawmill, road crossing at	35 08 44.8	77 09 35.5
Tuscarora station	35 09 34.1	77 12 49.5
Road crossing 2,190 feet east of milepost 51	35 10 34.1	77 16 46.0
Coar Creek station	35 11 11.7	77 19 14.3
Road crossing 2,306 feet east of milepost 56	35 11 50.8	77 21 48.8
Road crossing 1,140 feet west of milepost 58	35 12 31.5	77 24 30.1
Dover station	35 12 57.5	77 26 12.9
Road crossing 1,470 feet west of milepost 64	35 14 00.9	77 30 40.4
Neuse River bridge, east end of	35 14 36.5	77 33 27.0
Kinston, crossing of Atlantic Coast Line Rwy	35 15 31.5	77 34 27.1
Kinston station	35 15 51.4	77 34 53.7
Road crossing 1,480 feet west of milepost 72	35 16 15.8	77 38 12.4
Falling Creek station	35 16 34.8	77 41 22.6
Road crossing 285 feet east of milepost 78	35 17 08.6	77 44 05.8
Lagrange station	35 18 25.7	77 47 17.3
Beston station	35 20 37.0	77 50 49.7
Road crossing 1,080 feet west of milepost 88	35 21 38.6	77 52 59.4
Road crossing 160 feet west of milepost 91	35 22 47.0	77 55 59.6
Goldsboro, junction with Atlantic Coast Line Rwy	35 23 27.9	77 59 34.8
Goldsboro, north meridian mark	35 22 53.4	77 59 37.2
Goldsboro, south meridian mark	35 22 51.7	77 59 37.2

Geographic positions along Atlantic Coast Line Railway, between Goldsboro and Rockymount.

Stations.	Latitude. ° ′ ″	Longitude. ° ′ ″
Road crossing 160 feet north of milepost 87	35 25 30.0	77 58 58.8
Road crossing 360 feet south of milepost 90	35 28 02.3	77 58 58.2
Pikeville station	35 29 52.6	77 58 57.7
Water tank 580 feet north of milepost 93	35 30 50.5	77 58 57.4
Road crossing 180 feet north of milepost 94	35 31 38.2	77 58 56.4
Fremont station	35 32 41.8	77 58 25.8
Road crossing 1,510 feet south of milepost 99	35 35 24.6	77 57 01.5
Blackcreek station	35 38 14.2	77 55 56.5
Contentnea station, junction main line	35 40 42.8	77 55 51.0
Wilson station	35 43 21.9	77 54 24.5
Road crossing 860 feet north of milepost 110	35 44 47.9	77 53 37.7
Road crossing 20 feet south of milepost 113	35 47 03.2	77 52 24.6
Elm City station	35 48 21.4	77 51 42.4
Road crossing 1,080 feet south of milepost 116	35 49 17.1	77 51 11.8
Sharpsburg	35 52 01.0	77 49 43.8
Road crossing 1,790 feet south of milepost 121	35 53 10.9	77 49 08.4
South Rockymount, main line junction	35 55 51.7	77 48 02.5
Rockymount station	35 56 18.5	77 47 51.7

Geographic positions along Atlantic Coast Line Railway, Rockymount east to Plymouth.

Stations.	Latitude. ° ′ ″	Longitude. ° ′ ″
Road crossing 15 feet east of milepost 3	35 55 29.1	77 44 58.0
Road crossing 1,495 feet east of milepost 5	35 55 16.8	77 42 30.6
Kinsboro station	35 55 05.6	77 40 14.0
Hartsboro station	35 54 58.3	77 38 44.8
Road crossing 696 feet west of milepost 12	35 54 42.6	77 35 31.8
Tarboro, main-line junction	35 54 28.9	77 32 47.2
Tarboro station	35 54 28.6	77 32 33.0
Tar River bridge, west end of	35 53 35.2	77 32 07.2
Mildred station	35 50 53.8	77 29 29.4
Conetoe station	35 48 56.5	77 27 19.7
Road crossing 340 feet west of milepost 25	35 48 03.7	77 25 15.7
Bethel station	35 48 28.7	77 22 31.7
Parmele, railroad crossing at	35 48 58.4	77 18 50.8
Robersonville station	35 49 27.5	77 15 10.9
Everetts station	35 50 05.6	77 10 23.1
Williamston, junction of spur track to station	35 50 57.1	77 03 51.6
Williamston, road crossing at	35 50 48.0	77 03 35.2

Geographic positions along Atlantic Coast Line Railway, Rockymount east to Plymouth—Continued.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Water tank 760 feet west of milepost 48	35 49 18.1	77 02 40.6
Road crossing 990 feet east of milepost 51	35 48 35.8	76 59 14.6
Jamesville, tram road crossing 1 mile west of	35 48 38.6	76 54 41.1
Jamesville station	35 48 21.0	76 53 48.7
Road crossing 510 feet east of milepost 60	35 48 46.6	76 49 40.5
Road crossing 2,610 feet east of milepost 63	35 50 38.0	76 47 25.8
Plymouth, tram road crossing west of	35 51 08.8	76 45 45.0
Plymouth station	35 52 10.0	76 44 52.4
Plymouth, river front, first cross street	35 52 07.2	76 44 54.8
Plymouth, river front, last cross street	35 51 59.0	76 45 14.6
Plymouth, north meridian mark	35 51 41.9	76 45 14.1
Plymouth, south meridian mark	35 51 38.1	76 45 14.1

Geographic positions along the Atlantic Coast Line Railway from Washington to Parmele.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Cedar Grove triangulation station, United States Coast and Geodetic Survey	35 31 52.6	77 02 11.0
Washington station	35 32 43.2	77 03 27.2
Wharton station	35 35 48.9	77 07 19.2
Pactolus station	35 37 41.4	77 13 02.5
Whichard, tramroad crossing east of	35 41 43.3	77 15 13.5
Whichard station	35 41 49.3	77 15 16.6
Williams station	35 45 28.5	77 17 15.1

Geographic positions along Atlantic Coast Line Railway from Parmele to Kinston.

Stations.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Grindool station	35 45 57.0	77 19 57.2
Sawmill, road crossing at	35 41 18.3	77 21 17.2
House station	35 39 15.5	77 21 52.6
Greenville station	35 36 25.2	77 22 48.5
Parksville station	35 33 40.1	77 23 20.8
Winterville station	35 31 44.2	77 24 07.0
Ayden station	35 28 20.4	77 24 58.0
Flag station 1,300 feet north of milepost 72	35 24 25.8	77 25 36.2
Grifton station	35 22 20.5	77 26 17.8
Graingers station	35 19 11.8	77 30 32.0

SOUTH CAROLINA.

Primary Traverse.

A line of primary railroad traverse was run by Mr. S. Tatum, topographer, in 1900 from the Columbia State capitol (located by astronomic methods by the United States Coast and Geodetic Survey) along the Southern Railway to Spartanburg, connecting with the dome of St. Johns College, located by triangulation from the oblique arc of the United States Coast and Geodetic Survey. A circuit was completed by running from Carlisle, of the former line, eastward along the Seaboard Air Line Railway to Chester; thence southward along the Southern Railway to Columbia. Another circuit was completed by running westward from Columbia along the Southern Railway to Leesville; thence northward via highways to Prosperity; thence eastward along the Southern Railway, connecting with the first line at Alston.

Meridian lines were established at Chester, Columbia, Lexington, Union, and Winnsboro.

Geographic positions along Southern Railway from Columbia to Spartanburg.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Columbia. State capitol dome, United States Coast and Geodetic Survey astronomic position	33 59 56.8	81 02 02.7
Road crossing (near river bridge)	34 01 31.9	81 03 53.6
Milepost 7	34 05 08.1	81 05 36.2
Milepost 11	34 07 50.9	81 07 57.2
Bookman flag station, road crossing at	34 09 44.4	81 09 14.8
Littleton flag station	34 10 42.0	81 10 39.4
Milepost 19	34 12 32.4	81 13 42.3
Wallaceville flag station	34 12 34.4	81 15 05.9
Alston station	34 14 34.7	81 18 59.2
Road crossing 2,885 feet north of milepost 133	34 16 51.9	81 20 17.3
Milepost 131	34 18 04.5	81 20 32.9
Dawkins station	34 21 18.8	81 22 04.8
Road crossing 3,050 feet north of milepost 125	34 22 53.7	81 22 49.0
Strother station	34 23 34.2	81 23 39.8
Blair flag station	34 25 03.6	81 24 10.4
Beaver Creek, center of stream	34 26 25.4	81 24 28.5
Lyles Ford	34 27 06.3	81 25 01.3
Milepost 117	34 28 55.4	81 25 05.3
Shelton station	34 29 48.7	81 25 10.1
Milepost No. 113	34 32 13.5	81 26 07.6
Road crossing 383 feet south of milepost 111	34 33 50.4	81 26 43.4

Geographic positions along Southern Railway from Columbia to Spartanburg—Continued.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Carlisle station	34 35 31.2	81 27 54.6
Road crossing 1,330 feet north of milepost 107	34 36 52.7	81 29 20.0
Santuck station	34 38 00.8	81 31 07.8
Road crossing 215 feet south of milepost 103	34 39 09.2	81 31 48.7
Road crossing 2,818 feet south of milepost 101	34 40 19.2	81 32 41.8
Road crossing 245 feet south of milepost 100	34 41 11.1	81 33 37.4
Milepost 97	34 42 56.2	81 35 49.0
Union station	34 42 55.8	81 37 12.3
Milepost 94	34 44 10.9	81 37 58.0
Road crossing 2,360 feet south of milepost 92	34 45 20.8	81 37 43.4
Road crossing 1,270 feet south of milepost 90	34 47 08.4	81 38 36.4
Lockhart Junction	34 49 06.5	81 39 01.8
Jonesville station	34 50 07.0	81 40 42.1
Road crossing 4,255 feet south of milepost 83	34 51 14.8	81 42 12.3
Road crossing 200 feet north of milepost 82	34 51 53.9	81 43 44.1
Pacolet station	34 53 53.7	81 45 34.9
Milepost 77	34 54 23.4	81 47 31.0
Rich Hill flag station	34 54 11.8	81 48 59.7
Road crossing 1,265 feet north of milepost 74	34 55 01.5	81 50 34.1
Glendale station	34 55 24.1	81 51 38.5
Spartanburg, dome of St. John's College, United States Coast and Geodetic Survey position	34 57 17.2	81 54 55.6

Geographic positions along Seaboard Air Line Railway from Carlisle to Chester.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Carlisle, crossing of Seaboard Air Line Rwy. and Southern Rwy	34 35 27.3	81 27 50.8
Broad River, right bank	34 37 21.6	81 25 01.4
Leeds station	34 37 48.8	81 23 40.7
Milepost 54	34 38 41.7	81 20 42.4
Milepost 53	34 39 11.5	81 19 52.4
Milepost 51	34 39 44.6	81 18 05.2
Road crossing 1,955 feet east of milepost 50	34 40 06.4	81 16 46.3
Road crossing	34 42 12.1	81 14 20.3
Chester station, Seaboard Air Line Rwy	34 42 30.2	81 12 57.8

Station.	Latitude.			Longitu		
	°	′	″	°	′	
Chester station, Southern Rwy	34	42	16.9	81	12	1
Road crossing 1,017 feet north of milepost 46	34	41	09.1	81	11	2
Milepost 48	34	39	22.3	81	11	4
Road crossing (bridge overhead)	34	38	41.9	81	11	1
Cornwall station	34	36	23.4	81	10	4
Milepost 54	34	34	40.2	81	10	2
Blackstock station	34	33	29.3	81	09	1
Woodward station	34	31	33.7	81	10	1
Road crossing 270 feet south of milepost 59	34	31	12.0	81	09	4
Road crossing 700 feet south of milepost 61	34	29	51.1	81	08	2
Whiteoak station	34	28	19.5	81	07	0
Milepost 65	34	27	03.7	81	07	1
Adgers station	34	25	59.0	81	07	2
Road crossing 550 feet north of milepost 69	34	24	38.3	81	05	4
Winnsboro station	34	22	33.8	81	05	0
Milepost 73	34	21	20.8	81	04	5
Rockton station	34	20	24.7	81	04	4
Milepost 77	34	18	49.6	81	02	5
Simpson station	34	18	33.9	81	02	4
Milepost 80	34	18	38.4	81	00	2
Ridgeway station	34	18	18.9	80	57	3
Milepost 84	34	17	31.5	80	57	0
Campbells flag station	34	16	52.4	80	56	5
Milepost 87	34	15	13.6	80	57	3
Blythewood station	34	12	52.7	80	58	2
Milepost 93	34	10	33.5	80	57	1
Killian station	34	08	12.8	80	56	4
Milepost 97	34	07	16.7	80	56	4
Road crossing 815 feet north of milepost 98	34	06	44.2	80	56	5
Milepost 99	34	05	48.6	80	57	3
Dents flag station	34	05	08.2	80	58	2
Road crossing 3,475 feet south of milepost 101	34	03	58.6	80	58	5
Crossing of Seaboard Air Line	34	03	16.2	81	00	1
Milepost 104	34	02	34.2	81	00	3
Columbia, Blanding street station	34	00	39.2	81	01	2
Columbia, East Capitol street crossing	33	59	21.5	81	01	4

	° ′ ″	° ′ ″
Broad River, east bank	33 58 35.0	81 02 48.1
Cayce station	33 58 22.6	81 03 19.8
Road crossing 250 feet west of milepost 114	33 58 33.2	81 07 15.7
Arthur station	33 58 11.2	81 08 48.3
Milepost 119	33 58 17.5	81 12 17.6
Lexington station	33 57 58.3	81 14 05.2
Barrs station	33 56 17.5	81 17 36.4
Shumpert station	33 55 50.6	81 20 05.2
Milepost 129	33 55 25.4	81 21 24.7
Gilbert station	33 55 24.7	81 23 37.6
Summit station	33 55 24.7	81 25 20.6
Fredonia station	33 55 33.6	81 27 44.4
Leesville station	33 54 59.9	81 30 46.5

Geographic positions along highway from Leesville to Prosperity.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Crossing of Hollow Creek	33 56 59.1	81 32 02.4
Delmar post-office, road crossing 2 miles south of	33 59 14.7	81 31 19.8
Delmar post-office	34 00 38.0	81 30 41.3
Delmar post-office, 1½ miles north of, crossing of roads	34 01 29.4	81 29 51.9
Dupler post-office	34 03 00.1	81 29 42.9
Baptist Church	34 03 30.6	81 29 50.0
Saluda River, south bank	34 04 45.1	81 29 07.0
Upwell	34 05 22.6	81 28 48.1
Oneal School	34 07 00.7	81 30 14.6
Prosperity, 3 miles south of, road forks	34 10 27.5	81 32 07.1
Prosperity, 2 miles south of, road crossing (Columbia road)	34 10 48.4	81 31 56.2

Geographic positions along Southern Railway from Prosperity to Alston.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Prosperity, crossing Southern Rwy. and street	34 12 30.8	81 32 57.4
Road crossing 1,025 feet west of milepost 39	34 12 34.3	81 31 27.6
Road crossing 1,992 feet west of milepost 37	34 12 59.2	81 29 38.4
Road crossing 1,920 feet west of milepost 36	34 13 08.9	81 28 36.5
Road crossing, overhead bridge	34 13 49.2	81 26 56.3
Pomaria station	34 15 43.0	81 24 47.8
Road crossing 2,125 feet east of milepost 29	34 15 43.4	81 22 05.2
Road crossing 2,905 feet east of milepost 27	34 14 41.2	81 20 19.4
Road crossing 297 feet west of milepost 26	34 14 29.0	81 20 02.0
Peaks station	34 14 29.2	81 19 22.4
Alston station	34 14 34.7	81 18 59.2

Meridian Marks.

CHESTER, CHESTER COUNTY.

Location of station: In city park, just east of summit house, on top of knoll.

Station mark: A marble post 48 by 8 by 8 inches, set 46 inches in the ground, in the center of top of which is cemented a bronze tablet.

Distant mark: North of station 458 feet, a marble post 48 by 8 by 8 inches, set 46 inches in the ground, in center of top of which is cemented a bronze tablet.

Local reference: James Hamilton, jr., city engineer.

COLUMBIA, RICHLAND COUNTY.

Location of station: In State College park, east of college building and just north of street forming southern boundary of park.

Station mark: A marble post 48 by 6 by 6 inches, set 46 inches in the ground, in the center of top of which is cemented a bronze tablet.

Distant mark: North of station, a marble post 48 by 8 by 8 inches, set 46 inches in the ground, in top of which is cemented a bronze tablet.

Local referee: Professor Colcock.

LEXINGTON, LEXINGTON COUNTY.

Location of station: In city park, near southeast corner, about 10 feet north of south side.

Station mark: A granite post 48 by 10 by 10 inches, set 46 inches in the ground, with bronze tablet cemented in top.

Distant mark: A granite post 48 by 10 by 10 inches, set 46 inches in ground, 360.5 feet distant, in northeast corner of city cemetery.

UNION, UNION COUNTY.

Location of station: In grounds surrounding Union High School, west of high-school building and north of street forming southern boundary of grounds.

Station mark: A marble post 42 by 8 by 8 inches, set 40 inches in the ground, in the center of top of which is cemented a bronze tablet.

Distant mark: North of station 371 feet, near northern boundary of high-school grounds, a marble post 42 by 8 by 8 inches, set 40 inches in the ground, in the center of top of which is cemented a bronze tablet.

Resident referee: Colonel Young.

WINNSBORO, FAIRFIELD COUNTY.

Location of station: In park in front of Winnsboro College, about 200 feet west of east side of park and 5 feet north of south side of park.

Station mark: A granite post 48 by 8 by 8 inches, set 46 inches in the ground, with bronze tablet cemented in top.

Distant mark: North of station 348 feet, a granite post 48 by 8 by 8 inches, set 46 inches in ground.

Local referee: President Winnsboro College.

CENTRAL SECTION OF TOPOGRAPHY.

OHIO.

Primary Traverse.

The following geographic positions were determined from primary traverse in 1900 by Mr. George T. Hawkins, topographer.

Starting from United States Coast and Geodetic Survey astronomic pier at Mount Lookout, Cincinnati, the line follows the Baltimore and Ohio Southwestern and Baltimore and Ohio railroads to Columbus, Ohio; thence along the Hocking Valley Railroad to Toledo, Ohio, where it was tied to St. Mary's Church spire (United States Lake Survey station); thence back to Columbus, following line of Toledo and Ohio Central Railway, and connected with original line. Meridian lines were established at Bowling Green, Delaware, Findlay, Kenton, Marysville, Upper Sandusky, and Washington Court-House.

Geographic positions along Baltimore and Ohio Southwestern and Baltimore and Ohio railroads from Cincinnati to Columbus.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Cincinnati, Mount Lookout astronomic pier	39 08 21.93	84 25 21.52
Madisonville station	39 09 26.0	84 23 49.0
East Madisonville station	39 09 35.3	84 23 10.0
Madeira station	39 11 17.0	84 21 45.9
Allandale station	39 11 49.2	84 20 34.4
Remington station	39 13 35.8	84 19 26.7
Symmes station	39 14 50.0	84 17 45.8
Camp Ground station	39 15 18.2	84 16 47.5
Loveland, crossing of Pennsylvania and Baltimore and Ohio Southwestern railways	39 16 00.6	84 15 31.9
Hills station, crossing 340 feet west of	39 15 18.7	84 11 17.7
Cozaddale station, crossing 80 feet west of	39 16 15.2	84 09 39.9
Pleasant Plain station, crossing 110 feet west of	39 16 47.5	84 06 43.6
Windsor station, crossing 40 feet west of	39 17 04.6	84 02 59.5
Blanchester station, crossing 320 feet east of	39 17 31.4	83 59 14.2
Midland station, crossing 310 feet west of	39 18 13.7	83 54 35.4
Midland station	39 18 14.4	83 54 31.5
Cuba station, crossing under railway 300 feet south of	39 21 41.0	83 51 58.1

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Milepost 52, crossing 450 feet north of	39 23 59.4	83 51 17.8
Wilmington, Baltimore and Ohio station at	39 26 36.6	83 49 25.2
Blind siding, crossing 450 feet west of head block at	39 27 56.2	83 45 05.3
Melvin station, crossing 200 feet east of	39 28 24.8	83 43 01.2
Reesville, crossing at	39 28 57.1	83 40 41.2
Sabina station, crossing 100 feet west of	39 29 33.6	83 38 07.4
Milepost 69, crossing 800 feet west of	39 30 12.2	83 35 19.4
Rattlesnake, crossing over railroad at	39 30 41.8	83 33 09.4
Jasper Mills, crossing at	39 31 08.0	83 31 14.4
Washington Court-House, south azimuth stone 1,400 feet southward from Baltimore and Ohio station, near coal chutes 6 feet east of main track, 11 feet from end of bulkhead leading to elevated tracks. A limestone post, 36 by 8 by 8 inches, set 33 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. Distant mark is a copper bolt cemented in east abutment of wagon bridge. Azimuth 218° 12′ 45″. Distance from south stone 1,093 feet	39 32 04.0	83 26 53.7
Washington Court-House, crossing of Baltimore and Ohio and Cincinnati, Hamilton and Dayton railways	39 32 13.3	83 26 43.4
Fayette station	39 34 09.9	83 25 13.7
Bloomingburg station, crossing 300 feet east of	39 36 22.7	83 23 17.4
Madison Mills station, crossing 30 feet east of	39 39 13.5	83 20 21.4
Cook station, crossing 200 feet east of	39 40 59.4	83 18 24.3
Mount Sterling station, 300 feet east of Main street crossing	39 43 17.6	83 16 08.7
Era station, crossing 430 feet west of	39 44 23.2	83 14 38.1
Derby station, crossing 350 feet west of	39 46 08.4	83 12 20.5
Morgan station, crossing 100 feet west of	39 48 17.8	83 09 19.5
Pleasant Corners station, crossing 100 feet southwest of	39 50 37.5	83 07 41.1
Grove City station, crossing 100 feet southwest of	39 52 59.7	83 05 44.3
Urbancrest station, crossing 100 feet northeast of	39 53 53.2	83 05 00.4
Briggsdale station, crossing 50 feet northeast of	39 55 36.0	83 03 36.1
United States Geological Survey triangulation station, north base	39 55 57.3	83 03 18.6
Columbus, crossing Baltimore and Ohio Railway and Broad street	39 57 31.9	83 01 54.4

Positions along Hocking Valley Railway from Columbus to Toledo.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Crossing Hocking Valley Railway and pike road east and west	39 59 16.8	83 01 37.1
Columbus, Lane avenue station, crossing 150 feet south of	40 00 24.3	83 01 55.5
Olentangy station, crossing under railway 550 feet north of	40 03 48.5	83 02 48.1
Elmwood station, crossing 200 feet south of	40 05 25.2	83 03 09.4
Milepost 113, crossing 850 feet north of	40 07 01.8	83 03 30.7
Powell station, crossing 160 feet south of	40 09 29.6	83 04 42.3
Milepost 107, crossing 170 feet south of	40 11 44.5	83 05 22.7
Hyatts station, crossing 1,200 feet south of	40 12 58.3	83 05 17.6
Milepost 103, crossing 340 feet south of	40 15 12.6	83 05 08.5
Crossing telephone line	40 17 18.3	83 04 59.8
Delaware, south azimuth stone, 30 feet southeast of "Big Four" and Hocking Valley railways. A limestone post, 28 by 6 by 6 inches, set 28 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. Azimuth 185° 10′	40 17 34.5	83 04 58.4
Delaware, north azimuth stone, 105 feet north of center of street and 72 feet east of railroad. A limestone post, 36 by 6 by 6 inches, set 30 inches in the ground; in center of top is cemented a copper bolt. Azimuth 5° 10′	40 17 47.0	83 04 56.9
Delaware station, crossing 50 feet north of	40 17 58.7	83 04 57.4
Siding, crossing 150 feet south of south end of	40 20 00.3	83 06 03.3
Milepost 95, crossing 200 feet north of	40 21 51.6	83 07 15.9
Radnor station, crossing 160 feet north of	40 23 09.6	83 08 06.0
Mileposts 90 and 91, crossing halfway between	40 25 22.7	83 09 39.1
Prospect station, crossing at	40 27 06.1	83 10 45.7
Crossing, four corners	40 29 28.0	83 09 59.3
Owen station, crossing 600 feet north of	40 31 13.2	83 09 28.6
Mileposts 79 and 80, crossing halfway between	40 34 31.3	83 08 30.8
Marion station, 140 feet south of Main street crossing	40 35 19.2	83 08 28.0
Marion, south azimuth stone, 225 feet north of "Big Four" crossing and 45 feet north of tool house, between Y tracks and main line of Hocking Valley Railway. A limestone post, 40 by 7 by 6 inches, set 40 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. Distant mark is spire of Catholic Church. Azimuth of same is 259° 11′ 30″	40 35 25.0	83 08 30.1
Crossing under railroad	40 38 01.5	83 10 25.1

Positions along Hocking Valley Railway from Columbus to Toledo—Continued.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Morral station, crossing 160 feet north of	40 41 12.4	83 12 45.6
T. 3 S., R. 14 E., ¼ corner between secs. 33 and 34	40 44 17.6	83 14 44.8
Harpster station	40 44 20.4	83 15 04.2
Milepost 63, crossing 1,180 feet north of	40 47 19.8	83 17 12.1
Upper Sandusky, south azimuth stone, 9 feet east of railway and 1,395 feet distant from north stone. A limestone post, 30 by 5 by 5 inches, set 30 inches in the ground, in the center of top of which is cemented a bronze meridian tablet. Azimuth 180° 18′ 30″	40 49 14.8	83 17 31.4
Upper Sandusky, north azimuth stone 55 feet south and 150 feet east of crossing of Pittsburg, Fort Wayne and Chicago Railway and Hocking Valley Railway, 11 feet east of Hocking Valley Railway. A limestone post 38 by 6 by 6 inches, set 34 inches in the ground, in center of top is cemented a copper bolt	40 49 28.6	83 17 31.3
Upper Sandusky station	40 49 30.0	83 17 31.3
T. 2 S., R. 14 E., west corner of secs. 19 and 30	40 50 49.7	83 18 16.6
Crossing at flag station	40 53 26.8	83 19 54.7
Crawford station, crossing at	40 55 05.2	83 21 03.8
Carey station, crossing south of	40 57 04.2	83 22 28.3
Carey, south azimuth stone. A copper bolt sunk and cemented in south abutment of bridge north of station, on second stone and 4 feet east of east rail. Azimuth 151° 40′ 20″ to north mark	40 57 10.3	83 22 32.6
Carey, north azimuth stone, 339 feet north of "Big Four" crossing, 8 feet southeast of Northern Ohio crossing and 3½ feet east of east rail on Hocking Valley Railway. A marble post 24 by 8 by 8 inches, set 24 inches in the ground, in center of top is cemented a copper bolt	40 57 22.9	83 22 41.5
¼ corner north of sec. 5 on base line, range 13 E	40 59 31.7	83 23 49.1
Milepost 45, crossing 900 feet north of	41 01 43.4	83 24 16.0
Alvada station, crossing 100 feet north of	41 03 00.7	83 24 24.1
Siding, crossing 190 feet south of south end of	41 05 38.5	83 24 23.1
Crossing of telephone line	41 07 23.2	83 24 24.0
Fostoria, south azimuth stone, 7 feet east of east rail on Hocking Valley Railway, in arch culvert east of Fostoria Bulb and Bottle Co.'s Works. A bronze meridian tablet cemented in culvert. Azimuth, 179° 35′ 25″	41 08 38.8	83 24 24

Positions along Hocking Valley Railway from Columbus to Toledo—Continued.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Fostoria, north azimuth stone, 500 feet south of Baltimore and Ohio and Hocking Valley crossing, and 7 feet east of east rail of Hocking Valley Railway. A sandstone post 36 by 8 by 8 inches, set 34 inches in the ground, in the center of top is cemented a copper bolt	41 09 01.2	83 24 24.8
Fostoria, Hocking Valley Railway, and Toledo and Ohio Central Railway, and street-car crossing	41 09 13.0	83 24 25.6
Fostoria station, Hocking Valley Railway	41 09 40.7	83 24 37.1
Milepost 33, crossing 1,800 feet north of	41 12 11.9	83 25 02.2
Longley station, crossing 320 feet north of	41 13 20.6	83 25 14.3
T. 3 N., Rs. 12 and 13 E., cor. secs. 7, 18, 13, 12	41 13 29.6	83 25 13.7
Risingsun station, crossing 130 feet south of	41 16 06.8	83 25 43.4
T. 4 N., R. 12 E., corner secs. 11, 12, 13, and 14	41 18 43.5	83 26 14.6
Bradner station, crossing 150 feet north of	41 19 22.6	83 26 17.8
Milepost 21, crossing 840 feet south of	41 22 12.1	83 26 47.5
Pemberville station, crossing 80 feet north of	41 24 28.6	83 27 11.3
T. 5 N., R. 12 E., corner secs. 2, 3, 10, 11	41 24 49.6	83 27 16.7
Milepost 16, crossing 480 feet south of	41 26 33.2	83 27 39.9
Lemoyne station	41 29 39.6	83 28 25.7
Pike crossing	41 29 45.2	83 28 27.0

Positions along the Toledo and Ohio Central Railway between Toledo and Columbus.

Station.	Latitude.	Longitude.
	° ′ ″	° ″
Lime City, crossing of telephone line road at	41 32 06.2	83 34 01.8
Crossing of telephone line road	41 29 50.4	83 35 15.5
Dowling station, crossing 250 feet north of	41 28 40.4	83 35 53.6
Dowling, 1¼ miles southeast of, corner secs. 20, 21, 28, 29	41 27 27.8	83 36 35.4
Telephone line road	41 25 13.3	83 37 46.2
Bowling Green station, 200 feet north of, telephone road crossing	41 22 33.2	83 38 40.8
Corner Ts. 4 and 5 N., Rs. 10 and 11 E	41 20 31.3	83 39 02.4
Portage station, crossing 150 feet south of	41 19 35.9	83 38 44.8
Mermill station, crossing 200 feet north of	41 17 51.0	83 38 44.3
Corner Ts. 3 and 4 N., Rs. 10 and 11 E	41 15 14.0	83 39 00.6
Cygnet station, crossing 270 feet north of	41 14 23.5	83 38 43.3
Milepost 32, crossing at	41 12 40.0	83 38 42.8
West corner secs. 30 and 31, T. 3 N., R. 11 E	41 10 55.8	83 88 57.6

Positions along the Toledo and Ohio Central Railway between Toledo and Columbus—Continued.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Galatea, Baltimore and Ohio, and Toledo and Ohio Central crossing	41 10 40.8	83 38 42.8
Vanburen station, crossing 120 feet south of	41 08 17.5	83 38 42.8
Mortimer, crossing 465 feet south of railways	41 06 33.4	83 38 42.9
Mortimer station	41 06 38.0	83 38 42.9
Corner Ts. 1 and 2 N., Rs. 10 and 11 E	41 04 49.9	83 38 58.3
North Findlay, crossing of Lake Erie and Western Railway	41 02 50.7	83 38 42.2
Findlay, north azimuth stone at 790 feet north of "Big Four" crossing, 320 feet north of street, and 5 feet east of east rail of Toledo and Ohio Central Railway. A limestone post 36 by 7 by 5 inches, set 34 inches in the ground. A copper bolt is cemented in top	41 02 23.4	83 38 38.9
Findlay, south azimuth stone, 268 feet south of "Big Four" crossing, 4 feet north of sidewalk on Main street, and 17 feet west of west rail of Toledo and Ohio Central Railway. A limestone post 40 by 7 by 5 inches set 35 inches in ground, in center of top of which is cemented a bronze meridian tablet. Azimuth 178° 02′ 30″ to north stone	41 02 15.0	83 38 38.5
Findlay station	41 02 11.0	83 38 37.9
Findlay, crossing of Toledo and Ohio Central Railway and Findlay, Fort Wayne and Western Railway	41 01 20.4	83 38 32.2
Milepost 46, crossing 250 feet south of	41 00 28.2	83 38 28.1
Base line crossing	40 59 36.0	83 38 27.9
Milepost 49, crossing 130 feet south of	40 57 53.4	83 38 33.5
Milepost 51, crossing 200 feet south of	40 56 08.2	83 38 32.4
Corner Ts. 1 and 2 S., Rs. 10 and 11 E	40 54 23.3	83 39 03.7
Northern Ohio Railway crossing	40 53 56.8	83 38 48.7
Arlington station, crossing 180 feet north of	40 53 34.9	83 38 48.9
Milepost 56, crossing 470 feet south of	40 51 46.2	83 38 49.6
Williamstown station, crossing 70 feet south of	40 50 01.6	83 38 49.8
Corner Ts. 2 and 3 S., Rs. 10 and 11 E	40 49 09.7	83 39 04.6
Dunkirk station, crossing 900 feet north of	40 47 24.5	83 38 49.8
Pittsburg, Fort Wayne and Chicago Railway crossing	40 47 17.9	83 38 49.9
Milepost 64, crossing 910 feet south of	40 44 46.5	83 38 34.9
Blanchard station, 150 feet north of; telephone line road crossing	40 43 54.2	83 38 35.6
Milepost 67, crossing 500 feet south of	40 42 14.0	83 38 36.1
Milepost 69, crossing under railway 450 feet south of	40 40 30.3	83 38 35.1

Positions along the Toledo and Ohio Central Railway between Toledo and Columbus—Continued.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Pike crossing	40 39 19.2	83 37 59.9
Kenton, northwest azimuth stone 9 feet south of south rail on Toledo and Ohio Central Railway and 12 feet northwest of switch block. A sandstone post 30 by 6 by 6 inches, set 28 inches in ground, in center of top of which is cemented a bronze meridian tablet. Azimuth 273° 48′ 22″ to southeast stone	40 38 40.8	83 36 58.1
Kenton, southeast azimuth stone on middle pier of "Big Four" Railway bridge over Scioto River and Toledo and Ohio Central Railway; 15 feet south of Toledo and Ohio Central Railway and 3½ feet west of west rail of "Big Four" Railway. A copper bolt in top of stonework	40 38 40.0	83 36 42.2
Kenton station, street crossing 140 feet east of	40 38 36.9	83 36 29.2
Erie Railway crossing	40 38 00.6	83 35 47.2
Siding, crossing 70 feet north of north end of	40 34 35.9	83 34 29.9
"Big Four" Railway crossing	40 31 09.6	83 33 47.6
Ridgeway station, crossing 175 feet south of	40 30 57.9	83 33 46.1
Mileposts 83 and 84, crossing halfway between, 1,450 feet north of creek	40 29 21.1	83 33 33.6
Milepost 86, crossing 480 feet north of	40 27 11.0	83 33 16.9
West Mansfield, main road running north from	40 24 34.3	83 32 46.7
Milepost 91, crossing 830 feet south of	40 22 59.3	83 31 24.0
Lunda station, crossing 400 feet south of	41 21 59.2	83 30 31.7
Raymonds station, crossing 180 feet northwest of	40 19 56.2	83 28 11.5
Peoria, Erie Railway crossing at	40 18 39.2	83 27 04.0
Milepost 98, crossing 1,340 feet south of	40 18 05.4	83 36 34.9
Siding, crossing 120 feet north of north end of	40 16 28.9	83 25 11.7
Marysville station, crossing 100 feet east of	40 14 25.7	83 22 13.5
Marysville, north azimuth stone at 940 feet north of "Big Four" crossing, 450 feet north of north end of Y, 200 feet north of east and west road, and 16 feet east of east rail of Toledo and Ohio Central Railway. A sandstone post 30 by 6 by 6 inches, set 26 inches in ground; in center of top is cemented a copper bolt	40 14 12.8	83 21 15.7
Marysville, south azimuth stone at 613 feet south of crossing of "Big Four" Railway, 6 feet east of east rail of Toledo and Ohio Central Railway. A sandstone post 30 by 6 by 6 inches, set 28 inches in ground, in center of top of which is cemented a bronze meridian tablet. Azimuth 139° 43′ 20″ to north stone	40 14 01.1	83 21 02.8

Positions along the Toledo and Ohio Central Railway between Toledo and Columbus—Continued.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Milepost 106, 330 feet south of pike and telephone line crossing	40 13 36.3	83 20 36.1
Milepost 108, crossing 1,350 feet south of	40 12 08.2	83 19 00.5
Blind siding, crossing 20 feet northwest of head block	40 10 06.4	83 16 48.5
Milepost 113, pike crossing 520 feet southeast of	40 08 54.0	83 15 30.0
Arnold station, 580 feet southeast of pike and telephone line crossing	40 08 27.4	83 15 01.2
Flag station, telephone line 200 feet southeast of	40 06 15.6	83 12 38.5
Amlin station, crossing 100 feet northwest of	40 04 36.4	83 10 51.1
Milepost 122, crossing 300 feet southeast of	40 02 54.5	83 09 01.0
Telephone-line crossing	40 01 56.6	83 07 58.4
Toledo and Ohio Central Railway and Pennsylvania Railway crossing	40 00 04.5	83 05 57.4
Milepost 127, crossing at	39 59 36.1	83 05 26.7

Meridian Marks.

BOWLING GREEN, WOOD COUNTY.

Location of station: In southwest corner of court-house grounds.

Station mark: A limestone post 36 by 7 by 5 inches, set 34 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference mark: West line of grounds 21 feet; south line of grounds 12 feet.

Distant mark: North of station 352 feet, a limestone post 36 by 7 by 5 inches, set 36 inches in the ground, having a copper bolt cemented in its top.

Resident referee: County clerk.

DELAWARE, DELAWARE COUNTY.

Location of station: In western part of college grounds.

Station mark: A limestone post 36 by 6 by 6 inches, set 33 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference mark: Fountain bears S. 68° W., distance 69 feet; western line of college grounds 50 feet east.

Distant mark: North of station 480 feet, a limestone post 24 by 6 by 6 inches, set 24 inches in the ground and having a copper bolt cemented in its top.

Resident referee: Custodian of college buildings.

FINDLAY, HANCOCK COUNTY.

Location of station: In southeast part of college grounds.

Station mark: A sandstone post 36 by 6 by 6 inches, set 32 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference mark: Twenty-four feet from south fence, 15 feet from east fence, and 41 feet from water plug at corner.

Distant mark: North of station 525 feet, a sandstone post 36 by 6 by 6 inches, set 36 inches in the ground, having a copper bolt cemented in its top.

Resident referee: President of the school of the Church of God.

KENTON, HARDIN COUNTY.

Location of station: In southeast part of public-school yard.

Station mark: A sandstone post 36 by 7 by 7 inches, set 32 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Thirty feet north of south fence and 18 feet from east fence and 36 feet from southeast corner of school yard.

Distant mark: North of station 315 feet, a sandstone post 30 by 6 by 6 inches, set 30 inches in the ground, having a copper bolt cemented in its top.

Resident referee: President of school board.

MARYSVILLE, UNION COUNTY.

Location of station: On church lot, 9 feet northeast of the northeast corner of Methodist Church.

Station mark: A sandstone post 36 by 6 by 6 inches, set 34 inches in ground, in center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Twenty-seven feet from corner of street.

Distant mark: In the court-house grounds, north of station 375 feet, a sandstone post 30 by 6 by 6 inches, set 28 inches in the ground, having a copper bolt cemented in its top.

Resident referee: County clerk.

UPPER SANDUSKY, WYANDOT COUNTY.

Location of station: In southeastern part of public-school grounds, 10 feet north of sidewalk.

Station mark: A limestone post 36 by 7 by 7 inches, set 34 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: A white oak tree, 30 inches in diameter, bears N. 30 E., distant 48 feet.

Distant mark: North of station 348 feet, a limestone post 30 by 5 by 5 inches, set 30 inches in the ground, having a copper bolt cemented in its top.

Resident referees: School board.

WASHINGTON COURT-HOUSE, FAYETTE COUNTY.

Location of station: Two feet from curb line on north side of Temple street, in schoolhouse yard.

Station mark: A limestone post 36 by 8 by 8 inches, set 33 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: A locust tree 20 inches in diameter, bears S. 80° W., distant 40 feet; bay window in new schoolhouse, bears N. 40° E., distant 171 feet.

Distant mark: Three hundred feet north of station, a limestone post 30 by 6 by 6 inches, set 30 inches in the ground, having a copper bolt cemented in its top.

Resident referee: County clerk.

KENTUCKY AND INDIANA.

Primary Traverse.

Thirty-eight geographic positions in Kentucky and Indiana were determined from primary traverse by Mr. George T. Hawkins, topographer, in 1900.

This traverse starts from the Coast and Geodetic Survey astronomic pier at Henderson, Ky., and follows line of the Louisville, Henderson and St. Louis Railroad to Hawesville, Ky., crossing the Ohio River by triangulation, thence along the Cannelton branch of Louisville, Evansville and St. Louis Railroad to Lincoln City, Ind., connecting there with point on traverse run in 1899.

A spur line follows the wagon road from Hawesville, Ky., to southern edge of Rockford quadrangle.

Geographic positions along the Louisville, Henderson and St. Louis Railroad.

Station.	Latitude.	Longitude.
KENTUCKY.	° ′ ″	° ′ ″
Henderson, astronomic pier	37 50 24.8	87 35 26.1
Baskett, road crossing at	37 52 22.8	87 27 42.7
Spottsville	37 52 16.2	87 24 47.3
Worthington, road crossing at	37 50 18.2	87 17 42.7
Stanley, road crossing west of	37 49 31.3	87 14 42.2
Griffith, road crossing at	37 49 00.9	87 12 44.5
Road crossing near sawmill	37 48 39.6	87 10 04.9
Road crossing at store	37 48 25.2	87 09 15.2
Road crossing	37 47 18.5	87 08 27.8
Owensboro station	37 46 01.5	87 06 40.5
Crossing of Illinois Central and Louisville and Nashville railroads	37 46 11.5	87 05 34.8
Owensboro, road crossing east of	37 46 29.1	87 04 49.3
Thruston or Pates, road crossing at	37 47 56.3	87 03 07.4
Thruston or Pates, road crossing northeast of	37 49 26.1	87 01 52.9
Powers, road crossing at	37 51 57.0	86 59 39.3
Road crossing under railroad	37 53 35.6	86 58 58.8
Waitman, road crossing at	37 54 33.1	86 56 59.8
Lewisport, road crossing at	37 56 02.6	86 53 54.2
Lewisport, road crossing 2 miles east of	37 56 50.8	86 50 51.2
Falcon, road crossing at	37 57 07.5	86 49 33.8
Petri, road crossing at	37 55 44.4	86 48 14.5
Hawesville, crossing of Cross Main street	37 54 13.5	86 44 50.3

Geographic positions along the Louisville, Evansville and St. Louis Railroad.

Station.	Latitude.	Longitude.
INDIANA.	° ′ ″	° ′ ″
Cannelton, ferry landing at	37 54 36.6	86 44 40.6
Tell City depot	37 56 38.6	86 46 09.8
Windy Creek road crossing	37 59 06.6	86 47 11.6
Troy station	37 59 47.3	86 48 16.1
Road crossing at east end of big cut	38 02 11.3	86 49 11.2
Evanston, center of section 4, southeast of	38 02 21.5	86 50 18.5
Evanston station	38 02 24.9	86 50 25.0
T. 5 S., Rs. 4 and 5 W., secs. 19 and 24, ¼ corner between	38 04 06.1	86 54 14.0
Kennedy, road crossing at	38 04 46.6	86 55 22.3
T. 5 S., R. 5 W., secs. 9 and 10, ¼ corner between	38 05 55.1	86 57 34.9

Geographic positions along wagon road from Hawesville, Ky., to southern edge of Rockport quadrangle (spur Traverse Line).

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Hawesville, 2½ miles south of, forks of road	37 52 28.0	86 46 28.4
Chambers, forks of road east of	37 50 19.9	86 46 52.2
Corner of road 500 feet north of Pellville and Knottsville road	37 50 07.9	86 47 26.1
Floral, forks of road, 3 miles northeast of	37 49 26.6	86 47 22.1
Floral, forks of road, 1¼ miles northeast of	37 48 37.5	86 47 51.7
Floral. cross roads at	37 47 16.4	86 48 35.6
Floral, south azimuth mark	37 46 08.9	86 48 39.1

Meridian Marks.

OWENSBORO, DAVIES COUNTY, KY.

Location of station: In southeastern part of court-house grounds.

Station mark: A limestone post 36 by 7 by 7 inches, set 33 inches in the ground, in the center of top of which is countersunk and cemented an aluminum tablet.

Reference marks: Southeastern corner of court-house bears N. 30° W., distance 130 feet. Southeastern corner of grounds bears S. 50° E., distance 70 feet.

Distant mark: North of station 300 feet. A limestone post 36 by 7 by 7 inches, set 36 inches in the ground, having an aluminum tablet countersunk and cemented in its top.

Resident referee: County judge.

HAWESVILLE, HANCOCK COUNTY, KY.; CANNELTON, PERRY COUNTY, IND.

Location of station: In northeastern part of Hawesville, 30 feet north of railway, and on west bank of creek and south bank of Ohio River.

Station mark: A sandstone post 36 by 8 by 7 inches, set 36 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Northeastern corner of Mr. Carter's yard fence bears S. 45° W., distance 70 feet. Locust tree 24 inches in diameter bears S. 15° W., distance 90 feet.

Distant mark: North of station about 2,700 feet, in Cannelton, Ind., in south part of town, on north bank of Ohio River, and 110 feet from and in front of Sunlight Hotel, a sandstone post 36 by 8 by 6 inches,set 36 inches in the ground, having a copper bolt cemented in its top.

Resident referee: County surveyor.

IOWA.

Primary Traverse.

Thirty-five geographic positions in northeastern Iowa determined from primary railroad traverse by Mr. George T. Hawkins, topographer, in 1899 and 1900.

The traverse begins at the junction of railways at Independence, previously located by primary traverse, and follows the Burlington, Cedar Rapids and Northern Railway to Postville, thence eastward along the Chicago, Milwaukee and St. Paul Railway to McGregor triangulation station of the Mississippi River Commission.

Geographic positions along the Burlington, Cedar Rapids and Northern Railway.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Independence, junction of railways at	42 28 42.7	91 54 28.9
T. 89 N., R. 9 W., corner secs. 21, 22, 27, and 28	42 29 54.7	91 54 18.9
T. 90 N., R. 9 W., corner secs. 27, 28, 33, and 34	42 34 15.1	91 54 20.8
T. 90 N., R. 9 W., corner secs. 9, 10, 15, and 16	42 36 52.6	91 54 18.7
Hazleton station	42 37 06.8	91 54 21.3
Crossing Chicago Great Western Railway	42 40 18.8	91 54 42.5
Oelwein station	42 40 44.9	91 54 42.3
T. 91 N., R. 9 W., center section 20	42 40 45.4	91 54 48.8
T. 91 N., R. 9 W., corner secs. 9, 10, 15, and 16	42 42 04.6	91 54 15.3
T. 92 N., R. 9 W., corner secs. 22, 23, 26, and 27	42 45 35.9	91 53 01.0
Maynard station	42 46 28.8	91 52 59.4
T. 93 N., R. 9 W., corner secs. 14, 15, 22, and 23	42 51 44.0	91 53 06.7
Randalia station	42 51 49.4	91 53 06.7
Crossing Chicago, Milwaukee and St. Paul Railway	42 53 47.3	91 52 43.2
T. 94 N., R. 9 W., corner secs. 25, 26, 35, and 36	42 55 16.6	91 51 54.6
West Union station	42 57 18.3	91 48 30.4
T. 94 N., R. 8 W., secs. 21 and 22, ¼ corner between	42 56 34.8	91 47 07.0
Brainard station	42 55 52.1	91 42 26.4
T. 94 N., R. 7 W., secs. 29 and 30, ¼ corner between	42 55 41.3	91 42 20.1
Elgin station	42 57 23.5	91 38 31.3
T. 94 N., R. 7 W., secs. 14 and 15, ¼ corner between	42 57 24.7	91 38 47.9
T. 94 N., R. 7 W., secs. 2, 3, 10, and 11, corner of	42 58 42.8	91 38 45.9
Clermont station	43 00 14.2	91 39 11.1
Postville, junction 3 miles west of	43 04 40.9	91 37 48.0

Geographic positions along the Chicago, Milwaukee and St. Paul Railroad.

Station.	Latitude. ° ′ ″	Longitude. ° ′ ″
Postville station	43 05 14.8	91 34 17.0
T. 96 N., R. 6 W., secs. 33 and 32, ¼ corner between	43 05 20.75	91 34 08.3
Luana station	43 03 32.66	91 27 09.3
Monona station	43 03 15.8	91 23 32.8
T. 96 N., R. 6 W., secs. 11, 12, 13, and 14, corner of	43 03 06.7	91 23 24.8
Valdora station	43 01 26.7	91 21 03.7
Beulah station	43 01 34.6	91 18 36.8
Giard station	43 02 15.0	91 15 42.4
West McGregor station	43 02 28.9	91 11 57.5
North McGregor, crossing of railroads at	43 02 38.6	91 10 42.3
McGregor, Mississippi River Commission triangulation station	43 03 31.93	91 10 49.35

MISSOURI.

Primary Traverse.

Fifty-seven geographic positions determined by primary railroad traverse by Mr. George T. Hawkins, topographer, in 1900.

Starting from U. S. Mississippi River Commission triangulation station Quincy, the traverse was run along the line of Omaha, Kansas City and Quincy Railroad to Kirksville; thence to Glenwood, via Wabash Railroad; thence eastward to Wayland, via Keokuk and Western Railroad, and there connected with U. S. Mississippi River Commission triangulation station Fox River.

Geographic positions along the Omaha, Kansas City and Quincy Railroad.

Station.	Latitude. ° ′ ″	Longitude. ° ′ ″
Quincy, Mississippi River Commission triangulation station	39 56 31.00	91 24 51.18
West Quincy station	39 56 07.0	91 26 09.1
Taylor station	39 56 17.5	91 31 18.0
Maywood station	39 57 11.3	91 35 56.1
T. 60 N., Rs. 6 and 7 W., secs. 31 and 36, ¼, corner between	39 57 15.6	91 37 02.3
Durham station	39 58 30.1	91 39 57.4
T. 60 N., R. 7 W., secs. 7, 8, 17, and 18, corner of	40 00 17.3	91 42 39.3
Ewing station	40 00 18.9	91 42 50.8
T. 61 N., R. 8 W., secs. 26 and 27, ¼, corner between	40 03 24.5	91 46 02.5

Geographic positions along the Omaha, Kansas City and Quincy Railroad—Continued.

Station.	Latitude. ° ′ ″	Longitude. ° ′ ″
Lewistown station	40 05 08.6	91 48 57.2
T. 61 N., R. 8 W., corner on range line between secs. 7 and 18	40 05 37.4	91 50 16.2
T. 61 N., R. 9 W., secs. 3, 4, 9, and 10, corner of	40 06 30.5	91 53 40.2
Labelle station	40 07 02.7	91 54 59.9
Knox station	40 08 35.1	92 00 38.5
T. 62 N., R. 10 W., secs. 19, 20, 29, and 30, corner of	40 09 11.3	92 02 35.6
T. 62 N., R. 11 W., secs. 20 and 21, ¼, corner between	40 09 39.7	92 08 00.9
T. 62 N., Rs. 11 and 12 W., secs. 19 and 24, ¼, corner between	40 09 41.6	92 10 30.8
Edina station	40 09 45.2	92 10 40.5
T. 62 N., R. 13 W., secs. 24 and 25, ¼, corner between	40 09 14.8	92 17 55.4
Hurdland station	40 09 06.5	92 18 09.7
Crossing Atchison, Topeka and Santa Fe Railway and Omaha, Kansas City and Quincy Railway	40 08 46.9	92 20 05.6
Brashear station	40 08 45.2	92 22 42.3
T. 62 N., R. 14 W., secs. 24 and 25, ¼, corner between	40 09 12.3	92 24 43.8
T. 62 N., Rs. 14 and 15 W., secs. 13 and 18, ¼, corner between	40 10 32.1	92 30 56.1
Kirksville, crossing Wabash railroad	40 12 05.0	92 35 10.5

Geographic positions along Wabash Railroad between Kirksville and Glenwood.

Station.	Latitude. ° ′ ″	Longitude ° ′
T. 63 N., R. 15 W., secs. 20 and 21, ¼, corner between	40 14 59.7	92 35 31.5
T. 65 N., R. 15 W., secs. 33 and 34, corner on township line between	40 18 03.1	92 34 22.6
Sublett station	40 18 09.8	92 34 13.0
Greentop station	40 20 47.6	92 34 03.3
Queen City station	40 24 28.7	92 34 09.6
T. 65 N., R. 15 W., corner secs. 21, 22, 27, and 28	40 25 27.8	92 34 41.4
Julesburg station	40 27 54.5	92 36 21.5

Geographic positions along or near Keokuk and Western railroad, between Glenwood and Wayland.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
T. 66 N., R. 15 W., secs. 14, 15, 22, and 23, corner of	40 31 07.4	92 33 29.9
T. 66 N., R. 14 W., secs. 13 and 24, corner on range line between	40 31 09.3	92 31 14.3
Crossing of railroad and range line between Rs. 13 and 14, T. 66 N	40 30 13.9	92 24 57.6
T. 66 N., R. 13 W., secs. 28. 29, 32, and 33, corner of	40 29 29.8	92 22 16.6
Downing station	40 29 13.6	92 22 07.7
T. 65 N., R. 12 W., secs. 5 and 6, corner on township line between	40 28 39.3	92 16 29.3
Crawford station	40 28 28.4	92 16 29.0
Memphis station	40 27 13.8	92 09 56.9
T. 65 N., R. 11 W., secs. 8 and 9, ¼ corner between	40 27 22.4	92 08 04.2
T.65 N., R. 11 W., secs. 10 and 11, ¼ corner between	40 27 20.1	92 05 47.3
Arbela station	40 24 49.6	92 00 58.8
Granger station	40 28 00.0	91 58 31.9
T. 65 N., R. 10 W., sec. 2, center of	40 28 05.7	91 58 31.4
T. 65 N., Rs. 9 and 10 W., crossing of railroad and range line between	40 27 41.4	91 56 43.6
Luray station	40 27 03.0	91 52 29.1
T. 65 N., R. 9 W., secs. 11 and 14, ¼ corner between	40 26 41.3	91 51 46.7
Ashton station	40 26 46.6	91 48 26.4
T. 65 N., R. 8 W., secs. 8, 9, 16, and 17, corner of	40 26 41.7	91 48 00.4
Crossing of Atchison, Topeka and Santa Fe Railroad	40 26 17.9	91 46 32.4
Kahoka station	40 25 22.1	91 43 02.4
Clark City	40 25 11.0	91 40 53.5
T. 65 N., R. 7 W., sec. 21, center of	40 25 09.5	91 40 23.9
T. 65 N., R. 6 W., secs. 29, 30, 31, and 32, corner of	40 23 41.8	91 35 16.1
Wayland station	40 23 42.2	91 35 07.4
Fox River, Mississippi River Commission triangulation station	40 21 34.82	91 35 20.87

MISSOURI-KANSAS.

Primary Traverse.

Forty geographic positions along or near the Kansas City, Fort Scott and Memphis Railway between the astronomic pier at Fort Scott, Kans., and the astronomic pier at Springfield, Mo., located from primary railroad traverse by Mr. George T. Hawkins, topographer, in 1900.

Geographic positions along the Kansas City, Fort Scott and Memphis Railway.

Station.	Latitude.	Longitude.
KANSAS.	° ′ ″	° ′ ″
Fort Scott astronomic pier	37 50 25.76	94 42 26.75
Washburn station	37 47 10.2	94 41 51.2
Clarksburg station	37 45 36.2	94 39 23.1
T. 26 S., R. 25 E., secs. 26, 27, 34, and 35, corner of	37 45 16.7	94 38 58.0
T. 26 S., R. 25 E., sec. 36, southeast corner of	37 44 49.4	94 38 24.4
Garland station	37 43 56.2	94 37 19.2
T. 27 S., R. 25 E., secs. 23, 24, 25, and 26, corner of	37 40 27.5	94 37 50.0
Arcadia, section corner ¼ mile west of	37 38 42.1	94 37 50.0
Arcadia station	37 38 38.7	94 37 40.0
Crossing of railway and Kansas-Missouri State line	37 37 47.8	94 37 03.6
MISSOURI.		
Last Chance station	37 36 18.5	94 35 29.2
Ts. 32 and 33 N., R. 33 W., secs. 2, 3, 34, and 35, corner of	37 33 58.8	94 31 59.0
Liberal, crossing of railroads	37 33 37.9	94 31 27.5
Liberal station	37 33 28.9	94 31 13.9
T. 32 N., R. 32 W., secs. 13, 14, 23, and 24, corner of	37 31 08.9	94 24 24.0
Iantha station	37 31 02.1	94 23 57.0
T. 32 N., Rs. 31 and 32 W., crossing of railway and range line between	37 30 59.1	94 23 18.4
Lamar station	37 29 13.8	94 16 44.9
T. 32 N., R. 30 W., sec. 32, ¼ corner, south side of	37 28 16.6	94 15 13.1
Kenoma station	37 26 17.9	94 11 58.3
T. 31 N., Rs. 29 and 30 W., secs. 18, 19, 24, and 13, corner of	37 25 31.2	94 10 18.0
Golden City station	37 24 01.3	94 05 28.7
T. 31 N., R. 29 W., sec. 26, center of	37 24 04.1	94 05 24.1
T. 31 N., R. 28 W., secs. 17, 18, 19, and 20, corner of	37 23 32.7	94 02 40.5
Lockwood station	37 23 16.0	93 57 17.4
T. 31 N., Rs. 27 and 28 W., crossing of railway and range line between	37 23 09.5	93 56 05.6
Fletcher station	37 22 46.4	93 53 44.8
T. 30 N., R. 26 W., sec. 6, ¼ corner north of	37 22 29.9	93 50 25.1
South Greenfield station	37 22 34.3	93 50 23.7
Pilgrim station	37 21 29.6	93 46 34.2
T. 30 N., R. 25 W., secs. 8 and 17, ¼ corner between	37 20 36.3	93 42 26.5
Everton station	37 20 28.3	93 42 19.8
Emmet station	37 19 32.0	93 39 35.8
T. 30 N., R. 24 W., secs. 20 and 21, ¼ corner between	37 19 04.5	93 35 19.3
Ash Grove station	37 19 01.9	93 35 16.2

Geographic positions along the Kansas City, Fort Scott and Memphis Railway—Continued.

Station.	Latitude.	Longitude.
MISSOURI—continued.	° ′ ″	° ′ ″
T. 30 N., R. 24 W., secs. 34 and 35, south corner of	37 16 52.9	93 33 12.1
T. 29 N., R. 24 W., secs. 1 and 1, 2 and 2, corner of	37 15 33.5	93 30 48.5
Bois D'Arc station	37 15 30.3	93 30 28.1
T. 29 N., R. 23 W., secs 9, 10, 15, and 16, corner of	37 13 43.2	93 26 28.1
Elwood station	37 13 35.3	93 25 55.9
Nichols Junction	37 13 10.2	93 21 52.9

The following positions were obtained by Mr. George T. Hawkins, topographer, in 1900, from primary traverse, which starts from Springfield, Mo., astronomic pier and follows the St. Louis and San Francisco Railroad to Oswego, Kans., where it was connected with the courthouse spire, located by astronomic methods in 1884.

Geographic positions along the St. Louis and San Francisco Railroad.

Station.	Latitude.	Longitude.
MISSOURI.	° ′ ″	° ′ ″
Springfield astronomic pier	37 13 15.96	93 17 17.58
Dorchester station	37 12 36.4	93 23 13.3
T. 28 N., R. 23 W., sec. 2, ¼ corner north of	37 10 12.0	93 24 56.7
Brookline station	37 09 50.2	93 25 12.7
Republic station	37 07 11.1	93 28 53.2
T. 28 N., R. 23 W., secs. 19 and 20, ¼ corner between	37 07 09.9	93 28 52.6
T. 27 N., R. 24 W., secs. 4, 5, 8, 9, corner of	37 04 10.1	93 33 18.3
Billings station	37 04 03.4	93 33 19.9
Logan, section corner just east of	37 01 07.0	93 36 37.7
Logan station	37 00 51.8	93 37 00.6
Marionville station	36 59 59.9	93 37 53.0
Aurora station	36 58 37.5	93 43 16.2
T. 26 N., R. 26 W., secs. 11 and 12, ¼ corner between	36 58 38.1	93 44 11.8
Verona station	36 57 54.0	93 47 52.4
T. 26 N., R. 26 W., secs. 17 and 20, ¼ corner between	36 57 24.6	93 47 59.5
T. 26 N., R. 27 W., secs. 25 and 30, ¼ corner between	36 56 07.7	93 49 39.1
Globe station	36 55 53.6	93 51 09.4
Monett station	36 55 14.6	93 55 19.8
Pierce City, secs. 21 and 28, ¼ corner between	36 56 46.5	94 00 00.2
Pierce City station	36 56 41.8	94 00 10.9
Snyder station	36 58 01.7	94 01 10.6
T. 26 N., R. 28 W., secs. 17 and 18, ¼ corner between	36 58 07.1	94 01 31.9

Geographic positions along the St. Louis and San Francisco Railroad—Continued.

Station.	Latitude.	Longitude.
MISSOURI—continued.	° ′ ″	° ′ ″
Wentworth station	36 59 43.6	94 04 23.5
Talmage station	37 00 58.1	94 05 36.2
Talmage, section corner at	37 01 15.7	94 05 46.3
T. 27 N., R. 29 W., secs. 20 and 21, ¼ corner between	37 02 35.6	94 06 48.4
Sarcoxie station	37 04 03.0	94 07 01.1
T. 28 N., R. 30 W., secs. 25 and 36, corner on range line between	37 06 34.4	94 08 51.4
Reeds station	37 07 06.1	94 10 04.5
T. 28 N., R. 30 W., secs. 17, 18, 19, 20, corner of	37 08 27.1	94 14 14.8
Knights station	37 08 35.2	94 14 59.6
T. 28 N., R. 31 W., secs. 11, 12, 13, 14, corner of	37 09 20.4	94 16 26.0
Carthage station	37 11 06.1	94 18 35.7
T. 28 N., R. 31 W., sec. 6, one-fourth corner west of (elevation 960 feet)	37 10 39.2	94 20 42.7
Crossing, north and south (elevation 998 feet)	37 10 44.1	94 21 53.8
Macy station	37 11 11.6	94 23 48.0
Mansur station	37 11 40.6	94 25 07.2
Boysur, road crossing	37 11 46.1	94 26 44.8
Joplin Junction, head block	37 11 43.6	94 27 44.3
T. 29 N., R. 33 W., secs. 25, 26, 35, and 36, corner of	37 12 03.0	94 29 24.6
T. 28 N., R. 33 W., secs. 4 and 5, corner on township line between	37 11 17.0	94 32 40.1
Crossing, Missouri Pacific Railway	37 11 08.3	94 32 49.5
Carl Junction	37 10 46.5	94 33 50.5
Smithfield station	37 10 10.6	94 36 09.1
Missouri-Kansas State Line and "Frisco" Railway, crossing of	37 10 01.6	94 37 02.9
KANSAS.		
T. 33 S., R. 25 E., secs. 17 and 18, ¼ corner between	37 10 17.4	94 42 13.3
Crestline station	37 10 17.4	94 42 17.1
T. 33 S., R. 24 E., secs. 13 and 14, ¼ corner between	37 10 17.6	94 44 34.6
T. 33 S., R. 24 E., secs. 16 and 17, ¼ corner between	37 10 18.1	94 47 41.3
Kansas City, Pittsburg and Gulf Rwy., crossing of	37 10 35.4	94 50 12.1
Columbus station	37 10 34.2	94 50 32.4
Sherwin, crossing of Missouri Pacific R. R	37 10 48.6	94 56 51.5
T. 33 S., Rs. 22 and 23 E., secs. 7, 18, 12, 13, corner of	37 10 47.9	94 57 29.0
Oswego, section corner 3 miles east of	37 09 56.3	95 02 56.5
Oswego, court-house spire	37 09 58.9	95 06 24.0

Meridian Marks.

EDINA, KNOX COUNTY, MO.

Location of station: In court-house square.

Station mark: A granite post 36 by 6 by 6 inches, set 34 inches in the ground, 15 feet north of east and west walk and 78 feet from fence on east side of grounds. In center of top of the post is countersunk and cemented a bronze tablet.

Distant mark: Four hundred feet north of station, a marble post 20 by 6 by 6 inches, set 20 inches in the ground, in center of top of which is cemented a copper bolt. Stone is 10 feet south of east and west fence on north side of square and 80 feet from fence on east side of grounds.

Resident referee: County clerk.

CARTHAGE, JASPER COUNTY, MO.

Location of station: In west part of Central Park.

Station mark: A limestone post 42 by 8 by 6 inches, set 40 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Forty-eight feet from southwest corner of park and 1 foot from line of fence.

Distant mark: North of station 252 feet, a limestone post 30 by 8 by 6 inches, set 28 inches in ground and with a copper bolt cemented in its top.

Resident referee: County clerk.

KAHOKA, CLARK COUNTY, MO.

Location of station: In eastern part of court-house grounds.

Station mark: A marble post 36 by 6 by 6 inches, set 32 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: An ash tree 10 inches in diameter N. 73° W., distant 24 feet. An ash tree 14 inches in diameter N. 60° E., distant 15 feet.

Distant mark: North of station 300 feet, on inside line of sidewalk on north side of grounds, a marble post 30 by 6 by 6 inches, set 30 inches in the ground; has a copper bolt cemented in its top.

Resident referee: County clerk.

KIRKSVILLE, ADAIR COUNTY, MO.

Location of station: In northwest part of Normal School grounds.

Station mark: A limestone post 36 by 6 by 6 inches, set 34 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: A maple tree 10 inches in diameter bears N. 40° E., distant 63 feet. A maple tree 24 inches in diameter bears S. 80° W., distant 72 feet.

Distant mark: A limestone post 24 by 6 by 6 inches, set 24 inches in the ground, 360 feet north of station, 28 feet southwest of large maple tree, and 120 feet from northwest corner of grounds. Stone post has a copper bolt cemented in center of its top.

Residence referee: County clerk.

LAMAR, BARTON COUNTY, MO.

Location of station: In western part of court-house grounds.

Station mark: A limestone post 36 by 8 by 8 inches, set 34 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Southwest corner of court-house N. 35° E., distant 132 feet. Southwest corner of grounds bears S. 50° W., distant 63 feet.

Distant mark: North of station 322 feet, a limestone post 24 by 9 by 9 inches, set 24 inches in the ground, with copper bolt in its top.

Resident referee: County clerk.

LANCASTER, SCHUYLER COUNTY, MO.

Location of station: In east part of public-school yard.

Station mark: A limestone post 40 by 8 by 6 inches, set 30 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Southeast corner of schoolhouse N. 10° 30′ W., distant 123 feet; 3 feet from south line and 45 feet from east line of grounds.

Distant mark: North of station 276 feet, on line of sidewalk on north side of street, 36 feet west of street corner, a limestone post 30 by 8 by 8 inches, set 30 inches in ground, having a copper bolt cemented in its top.

Resident referee: County clerk.

MEMPHIS, SCOTLAND COUNTY, MO.

Location of station: In eastern part of high-school grounds.

Station mark: A limestone post 40 by 8 by 6 inches, set 36 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Southeast corner of schoolhouse N. 16° W., distant 123 feet. Maple tree 8 inches in diameter bears N. 74° E., distant 30 feet.

Distant mark: North of station 290 feet and 4 feet south of north fence. A limestone post 30 by 8 by 8 inches, set 30 inches in the ground, with copper bolt cemented in the top.

Resident referee: County clerk.

COLUMBUS, CHEROKEE COUNTY, KANS.

Location of station: In eastern part of court-house grounds.

Station mark: A limestone post 36 by 6 by 6 inches, set 34 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: Southeastern corner of court-house N. 50° W., distant, 84 feet. It is 21 feet from south line and 30 feet from east line of grounds.

Distant mark: North of station 270 feet. A limestone post 24 by 6 by 6 inches, set 24 inches in the ground, in the center of top of which is set a copper bolt.

Resident referee: County clerk.

ARKANSAS.

Primary Traverse.

Twenty-two geographic positions, determined by Mr. Geo. T. Hawkins, topographer, from primary traverse in Arkansas, in 1900. The line starts from a position in front of station at Gurdon, established by primary traverse in 1898, and follows the St. Louis, Iron Mountain and Southern Railway to Camden; thence along the St. Louis and Texas Railway to Harlow.

Geographic positions in Arkansas.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Gurdon station	33 55 08.0	93 09 12.1
Whelan station	33 49 47.1	93 07 36.3
Sayre, road crossing at	33 45 04.3	93 05 32.3
T. 11 S., R. 19 W., secs. 29 and 30, ¼ corner between	33 45 02.7	93 05 15.2
Basham station	33 43 21.7	93 03 14.0
Chidester station	33 42 07.9	93 01 14.1
T. 12 S., R. 19 W., secs. 11, 12, 13, 14, corner of	33 41 55.1	93 01 10.4
Van Wagoner station	33 41 00.9	92 59 15.1
Wise station	33 39 30.9	92 56 02.5
Lester, crossing ½ mile north of	33 38 56.0	92 55 06.8
Camden, at road crossing 1 mile northwest of, iron bench-mark post, elevation 143 feet	33 35 44.9	92 51 10.5
Camden, crossing of telephone line	33 34 55.8	92 50 00.6

Geographic positions in Arkansas—Continued.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Camden, crossing, street to Iron Mountain station at south end of bridge	33 34 51.0	92 49 41.4
Camden, road crossing at post-office 4 miles northeast of	33 39 02.9	92 46 24.7
Lilley station	33 40 09.3	92 44 25.2
Onalaska station	33 40 19.8	92 43 57.6
Eagle Mill station	33 40 53.2	92 42 30.5
Millville station	33 42 22.7	92 39 19.1
T. 11 S., R. 15 W., secs. 34 and 35, ¼ corner between	33 43 30.6	92 37 14.5
Bearden station	33 43 22.1	92 36 58.6
Best station	33 43 40.9	92 36 18.3
Harlow station	33 44 45.3	92 33 59.8

Meridian Marks.

CAMDEN, OUACHITA COUNTY, ARK.

Location of station: In western part of court-house grounds.

Station mark: A limestone post 42 by 8 by 8 inches, set 38 inches in the ground, in the center of top of which is countersunk and cemented a bronze tablet.

Reference marks: 27 feet from west gate, 39 feet from west door of court-house, and 6 feet south of walk.

Distant mark: 260 feet north of station, in northern part of Methodist churchyard, across street from court-house, 2 feet from north line of churchyard and 10 feet from north wall of church, a limestone post 30 by 8 by 8 inches, set 30 inches in the ground, having a copper bolt set in center of its top.

Resident referee: County clerk.

ROCKY MOUNTAIN SECTION OF TOPOGRAPHY.

SOUTH DAKOTA-WYOMING.

Triangulation Stations.

In 1900 Mr. A. F. Dunnington, topographer, executed control for the Edgemont quadrangle by reoccupying Fossil, Bradley, Sullivan, and Alkali, and establishing two new stations—Provo and Cottonwood. He also extended triangulation northward from Terry Peak, Bear Butte, and Crow Peak, occupying eight new stations, controlling three 30-minute quadrangles.

PROVO, FALL RIVER COUNTY, S. DAK.

On highest point of knob on west end of bald ridge 2 miles southeast of Provo station, Burlington and Missouri River Railroad, and about 10 miles south of Edgemont.

Station mark: A bronze bench-mark tablet cemented in sandstone, 9 by 13 by 6 inches, set flush with surface of ground.

[Latitude 43° 10′ 18.03″. Longitude 103° 48′ 12.52″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Cottonwood	111 22 38.98	291 10 41.84	4.4043384
Sullivan	161 40 02.55	341 32 07.30	4.6932508
Bradley	208 34 01.20	28 41 37.58	4.4956729
Fossil	261 06 55.77	81 19 23.45	4.3973066

COTTONWOOD, CONVERSE COUNTY, WYO.

This station is on the highest point of the bald divide, about 2½ miles west of the Dakota-Wyoming State line. It is 6 miles northwest of the junction of Alum and Cottonwood creeks and about 2½ miles southwest of south end of hay road, which bears southwest, and leaves the Edgemont and Lance Creek wagon road about 8 miles west of Edgemont.

Station mark: A bronze bench-mark tablet set in sandstone, 10 by 10 by 6 inches, 3 inches below surface of ground; a mound of small stones was erected over tablet.

[Latitude 43° 15′ 16.38″. Longitude 104° 05′ 39.88″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Alkali Butte	143 49 32.35	323 33 37.12	4.7222453
Sullivan	191 57 58.51	12 02 02.85	4.5849751
Provo	291 10 41.84	111 22 38.98	4.4043384

OWL BUTTE, BUTTE COUNTY, S. DAK.

A lone, bare butte in open prairie about 35 miles northeast of Sturgis, on divide east of Willow Creek. Station is near the center of summit.

Station mark: A bronze triangulation tablet cemented in rock in place.

[Latitude 44° 48′ 20.27″. Longitude 103° 13′ 05.18″.]

To station—	Azimuth.	Back azimuth.	Log. distance
	° ′ ″	° ′ ″	*Meters.*
Bear Butte	23 36 51.15	203 28 22.65	4.6012777
Susie Peak	79 32 16.68	259 10 20.70	4.6212654
Castle Rock	141 36 30.14	321 26 47.25	4.4640921

CASTLE ROCK, BUTTE COUNTY, S. DAK.

A prominent peak in T. 12 N., R. 5 E., Black Hills meridian, 28 miles air line northeast of Belle Fourche, 12 miles southwest of junction of Sand Creek and South Fork of Moreau River. The summit is a narrow ridge about 150 yards in length, the station being on a knob at northern end, which is about 10 feet lower than south end. Road from Belle Fourche to Slim Buttes passes from southwest to northeast about 2 miles east of the peak.

Station mark: A bronze triangulation tablet cemented in a flat rock buried in the ground flush with surface.

[Latitude 45° 00′ 38.65″. Longitude 103° 26′ 50.82″.]

To station	Azimuth.	Back azimuth.	Log. distance
	° ′ ″	° ′ ″	*Meters.*
Susie Peak	36 58 45.39	216 46 29.57	4.5814773
Wymonkota	90 11 12.42	269 44 24.24	4.6971830
Owl Butte	321 26 47.25	141 36 30.14	4.4640921
Bear Butte	357 49 38.82	177 50 48.88	4.7740756

SUSIE PEAK, BUTTE COUNTY, S. DAK.

A small conical peak near the center of T. 9 N., R. 3 E., Black Hills meridian, situated on east end of a high ridge bearing southeast and northwest, being the divide between Crow and Owl creeks, about 6 miles northeast of the town of Belle Fourche and about 2 miles north of Belle Fourche River.

Station mark: A bronze triangulation tablet cemented in stone sunk flush with surface of ground.

[Latitude 44° 44′ 10.08″. Longitude 103° 44′ 13.75″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Terry	8 09 49.51	189 05 58.21	4.6616893
Crow Peak	30 34 32.16	210 25 19.14	4.5342997
Warren Peak	63 20 21.79	242 50 33.50	4.7991448
Wymonkota	138 34 02.37	318 19 33.87	4.6099751
Castle Rock	216 46 29.57	36 58 45.39	4.5814773
Owl Butte	259 10 20.70	79 32 16.68	4.6212654
Bear Butte	318 43 45.57	138 57 09.55	4.5838871

WYMONKOTA, CUSTER COUNTY, MONT.

A small conical peak situated in southeastern corner of State, on bare divide between Owl and Lone Tree creeks, about one-half mile southeast of head of the latter, about 2 miles west of Watson's sheep ranch, and about 1½ miles west of the "Hash Knife" road from Belle Fourche.

Station mark: A bronze triangulation tablet cemented in large rock set in ground.

[Latitude 45° 00′ 37.62″. Longitude 104° 04′ 44.71″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Warren	26 15 49.71	206 00 23.64	4.8175736
Alzada	70 47 36.29	250 30 27.84	4.5290474
Castle Rock	269 44 24.24	90 11 12.42	4.6971830
Susie Peak	318 19 33.87	138 34 02.37	4.6099751
Crow Peak	350 43 02.11	170 48 14.23	4.7836118

ALZADA, CROOK COUNTY, WYO.

A bald peak, most southerly of group of bare hills, about 8 miles southwest from Alzada post-office, Mont., on the divide between the Little Missouri and Belle Fourche rivers, about 6 miles southwest from the big bend of the latter, and about 5 miles south of the Wyoming-Montana line.

Station mark: A bronze triangulation tablet cemented in stone sunk below surface of ground between two large rocks bearing southeast and northwest about 3½ feet apart, the southeast rock 30 by 18 inches, 5 inches above ground, and the northwest rock 24 by 8 inches, 12 inches above ground.

[Latitude 44° 54′ 34.73″. Longitude 104° 29′ 00.17″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Wymonkota	250 30 27.84	70 47 36.29	4.5290474
Crow Peak	319 12 17.68	139 34 33.11	4.8078017
Warren Peak	356 17 47.66	176 19 26.09	4.6801626

WARREN PEAK, CROOK COUNTY, WYOMING.

The most easterly of the two high bare summits of the Bear Lodge Mountains, about 6 miles northwest of the town of Sundance, Wyoming, at the head of Bear and Miller creeks. Richardson's ranch lies about 6 miles north, on Beaver Creek. Road from ranch to Sundance passes about three-fourths of a mile northeast of station.

Station mark: A bronze triangulation tablet cemented in stone in place on highest point, 6 feet southeast of a mining claim stake in cairn of rocks.

[Latitude 44° 28′ 46.79″. Longitude 104° 26′ 40.23″.]

To station—	Azimuth.	Back azimuth.	Log. distance
	° ′ ″	° ′ ″	*Meters.*
Alzada	176 19 26.09	356 17 47.66	4.6801625
Wymonkota	206 00 23.64	26 15 49.71	4.8175725
Susie Peak	242 50 33.50	63 20 21.79	4.7991448
Belle Fourche	244 47 34.89	65 12 58.96	4.7250777
Crow Peak	271 16 58.99	91 37 31.29	4.5898004

BELLE FOURCHE, BUTTE COUNTY, SOUTH DAKOTA.

A three-point station on summit of a sandy hill north of Belle Fourche River, a meridian mark distant 1,570 feet north of south meridian station, which is in the grounds of the county court-house in Belle Fourche.

Station mark: A sandstone post, 30 by 12 by 12 inches, set 25 inches in the ground, in the top of which is cemented a bronze meridian tablet.

[Latitude 44° 40′ 50.31″. Longitude 103° 50′ 28.93″.]

To station—	Azimuth.	Back azimuth.	Log. distance
	° ′ ″	° ′ ″	*Meters.*
Crow Peak	21 21 15	201 16 25	4.3984959
Warren Peak	65 12 59	244 47 35	4.7230707
Susie Peak	233 12 58	53 17 22	4.0131451

DEER EARS, BUTTE COUNTY, SOUTH DAKOTA.

(Not occupied.)

The south summit of a double-topped hill known as "Deer Ears," near the line between T. 12 N., Rs. 7 and 8 E., Black Hills meridian.

[Latitude 44° 59′ 57.09″. Longitude 103° 10′ 41.88″.]

STATE CORNER—WYOMING, MONTANA, AND SOUTH DAKOTA.

The stone post marking the corner common to Wyoming, Montana, and South Dakota, being the northeast corner of Wyoming.

Station mark: A white sandstone, 18 by 22 inches, 20 inches above ground, bearing no marks; against this rests a triangular sandstone column, 50 inches long, which has fallen from its original position above the other, one side 16 inches wide marked "Dak. 45 N. L.," underneath "27 W. L.;" one side 12 inches wide marked "N. W. Mont.," and the other 12 inches wide marked "S. W. Wyo." Three pits, each 4 feet square, lie north, west, and south of mark.

[Latitude 44° 59′ 54.0″. Longitude 104° 03′ 02.4″.]

STATE CORNER, MONTANA AND SOUTH DAKOTA.

(Not occupied.)

The stone post marking the southeast corner of Montana.

Station mark: A stone, 20 by 8 inches, 33 inches above ground. Among a lot of large loose stones on ground, one is marked on one side "Wyo.," on another side "Mon. 45 N. L.," and another stone is marked "Dak. 27 W. L."

Reference marks: Three stones set in ground 6 feet distant east, northwest, and southwest from station are marked on top "D.," "M.," and "W.," respectively.

[Latitude 44° 59′ 55.7″. Longitude 104° 01′ 57.3″.]

Meridian Mark.

BELLE FOURCHE, BUTTE COUNTY, SOUTH DAKOTA.

Location of station: In grounds of county court-house.

Station mark: Red sandstone post, 60 by 10 by 10 inches, set 56 inches in the ground, in center of top of which is cemented a bronze bench-mark tablet.

Reference mark: Southeast corner of court-house, distant 47.75 feet. True azimuth to same is 167° 10′.

Distant mark: North of station 1,570 feet, on summit of sand hill north of Belle Fourche River, a sandstone post, about 30 by 12 by 12 inches, set 25 inches in the ground, in top of which is cemented a meridian tablet.

TEXAS.

Triangulation Stations.

In March, April, and May, 1900, triangulation control was extended from stations County Line, Dexter, Tex., and Marietta, Ind. T., westward over the Gainesville and Montague quadrangles, by Mr. R. H. Chapman, topographer.

In addition to the occupation of the three old stations, nine new stations were selected and occupied, and four points were located by intersections.

HENSON, COOKE COUNTY.

On a rocky, thinly timbered hill, about 6 miles northeast of Gainesville, about 150 yards northeast of Henson's house, about 6 miles southwest from Callisburg, and one-half mile east of Gainesville-Whitesboro road.

Theodolite elevated 18 feet.

Station mark: A bronze tablet cemented in rock in place level with surface.

Reference marks: Nail in base blaze on post oak, azimuth 129° 13′, distance 42 feet; nail in base blaze on post oak, azimuth 243° 54′, distance 18.9 feet; nail in base blaze on post oak, azimuth 12° 54′, distance 14.2 feet.

[Latitude 33° 38′ 45.87″. Longitude 97° 03′ 24.41″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Hood	70 11 31.76	250 02 27.00	4.4311207
Hemphill	107 57 58.85	287 51 01.20	4.3094543
Huneycutt	173 35 18.33	353 34 54.10	4.0030462
County Line	227 02 59.91	47 06 06.66	4.0737968

HUNEYCUTT, COOKE COUNTY.

On a flat, timbered ridge, about 12 miles northeast of Gainesville, about one-eighth mile west of Gainesville-Horseshoe Bend road, and one-half mile northwest of the widow Huneycutt's house, from which a wood road passes station. Due east from station is a very sandy field.

Theodolite elevated 18 feet.

Station mark: A bronze tablet cemented in rock in place about inches under surface of ground.

Reference marks: Nail in blaze on black-oak tree, azimuth 302° 13′, distance 36.65 feet; nail in blaze on post-oak tree, azimuth 44° 32′, distance 24.10 feet; nail in blaze on post-oak tree, azimuth 142° 31′, distance 33.70 feet.

[Latitude 33° 44′ 10.69″. Longitude 97° 04′ 08.10″.]

To station—	Azimuth.	Back azimuth.	Log. distance
	° ′ ″	° ′ ″	*Meters.*
Hood	51 41 32.10	231 33 50.90	4.4901191
Hemphill	78 29 38.85	258 23 04.96	4.2706120
Marietta	175 10 59.88	355 10 22.26	4.3153285
Dexter	229 01 55.28	49 05 48.81	4.1555001
County Line	281 08 41.03	101 12 12.24	3.9994935
Henson	353 34 54.10	173 35 18.33	4.0030462

GAINESVILLE, THIRD WARD SCHOOL, COOKE COUNTY.

(Not occupied.)

Station mark: Middle of statue on cupola of Third Ward school building.

[Latitude 33° 38′ 04.48″. Longitude 97° 08′ 51.86″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Hemphill	124 33 22.25	304 29 26.20	4.1243076
Henson	261 22 52.45	81 25 53.85	3.9311680

HEMPHILL, COOKE COUNTY.

On a high, rolling prairie, about 11 miles northwest from Gainesville, in pasture owned by J. C. Hemphill, just east of line of posts (no wire) running north and south and on highest point in vicinity. It is one-half mile northeast from Hemphill homestead, one-fourth mile north of house occupied by J. R. Bice, and about 1 mile northeast of Van Slack church.

Station mark: A bronze tablet in sandstone post 36 by 8 by 10 inches, set 32 inches in the ground.

[Latitude 33° 42′ 09.39″. Longitude 97° 15′ 57.65″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Hood	21 05 53.53	201 03 45.56	4.2189604
Muenster	62 36 24.98	242 32 46.93	4.0573381
Meador	92 24 21.45	272 17 30.02	4.2812156
Marietta	214 06 33.63	34 12 30.88	4.4684405
Dexter	245 38 15.59	65 48 43.34	4.5036342
Huneycutt	258 23 04.96	78 29 38.85	4.2706120
Henson	287 51 01.20	107 57 58.85	4.3094543

HOOD, COOKE COUNTY.

On a high, rolling prairie ridge, about 12 miles southwest from Gainesville, 2 miles northeast from Hood post-office, and 5 miles southwest from Myra post-office. In pasture owned by W. P. Gregory, 57 yards northeast from J. F. Hood's house, one-half mile south of W. P. Gregory's house, and 6 feet west of fence on west side of road from Myra to Hood. It is 52 feet 4 inches north (6 feet west) of corner post on line of Gregory and Hood property, between Gainesville-Rosston and Gainesville-Forrestburg roads.

Station mark: A bronze tablet in sandstone post 30 by 8 by 8 inches, set 30 inches in the ground.

[Latitude 33° 33′ 47.98″. Longitude 97° 19′ 48.70″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Jackson	102 32 46.31	282 29 16.77	4.0004447
Meador	141 01 13.31	320 56 30.61	4.3199664
Muenster	157 42 37.58	337 41 07.82	4.0420488
Hemphill	201 03 45.56	21 05 53.53	4.2189604
Huneycutt	231 33 50.90	51 42 32.10	4.4901191
Henson	250 02 27.00	70 11 31.76	4.4311207

MUENSTER, COOKE COUNTY.

The belfry on the Roman Catholic Church at Muenster was occupied at a point about 45 feet above ground.

Station mark: Gilt cross on spire of church.

[Latitude 33° 39′ 18.81″. Longitude 87° 22′ 30.87″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Jackson	34 52 06.74	214 50 06.74	3.9901891
Jim Ned	78 57 58.34	258 49 28.52	4.3833586
Meador	123 58 48.57	303 55 35.45	4.0339101
Hemphill	242 32 46.93	62 36 24.98	4.0573381
Hood	337 41 07.82	157 42 37.58	4.0420488

JACKSON, COOKE COUNTY.

On a high rolling prairie, about 7 miles southwest of Muenster and 7 miles northwest from Hood (post-office), one-half mile north of Gainesville-Forrestburg road, in pasture owned by J. S. Jackson, one-half mile northward from his house. Higher ground under cultivation lies one-fourth mile northward of station.

Station mark: A bronze tablet set in fossiliferous limestone post, 24 by 8 by 8 inches, set 24 inches in ground.

[Latitude 33° 34′ 58.40″. Longitude 97° 26′ 07.61″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Jim Ned	100 34 01.41	280 27 32.01	4.2660752
Muenster	214 50 06.74	34 52 06.74	3.9901891
Hood	282 29 16.77	102 32 46.31	4.0004447

MEADOR, MONTAGUE COUNTY.

On a prairie knoll, with few small trees, about 4 miles northeast of Saint Jo and 1 mile north of Missouri, Kansas and Texas Railway track, in "stack" yard owned by Meador Bros. (Saint Jo). The Saint Jo-Marysville road passes about 400 yards west of station.

Theodolite elevated 18 feet.

Station mark: A bronze tablet cemented in a stone post, about 36 by 8 by 10 inches, set 36 inches in ground.

[Latitude 33° 42′ 34.81″. Longitude 97° 28′ 19.05″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Jim Ned	54 05 15.87	232 59 58.68	4.2604098
Saint Jo	76 43 55.23	256 42 19.02	3.6615794
Mosley	94 54 05.67	274 50 04.80	4.0497723
Hemphill	272 17 30.02	92 24 21.45	4.2812156
Muenster	303 55 35.45	123 58 48.57	4.0339101
Hood	320 56 30.61	141 01 13.31	4.3199664

SAINT JO (SCHOOLHOUSE), MONTAGUE COUNTY.

(Not occupied.)

Station mark: Point of cupola on brick schoolhouse at Saint Jo.

[Latitude 33° 42′ 00.60″. Longitude 97° 31′ 12.44″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Jim Ned	46 51 37.99	226 47 56.93	4.1489547
Mosley	106 39 41.46	286 37 17.02	3.8452950
Meador	256 42 19.02	76 43 55.23	3.6615794

MOSLEY, MONTAGUE COUNTY.

On northern point of prairie ridge, about 5 miles west of Saint Jo, 3 miles south of Bonita and one-half mile south of Saint Jo-Nocona road, in pasture owned by Luke Mosley, who lives about one-half mile northeast from station.

Station mark: A bronze tablet set in a stone post, 30 by 10 by 8 inches, set 23 inches in the ground.

Reference mark: Nail in blaze on north side of tree 4 inches in diameter. Azimuth, 333° 32′; distance, 55 feet.

[Latitude 33° 43′ 05.70″. Longitude 97° 35′ 33.01″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Jim Ned	17 01 14.61	196 59 57.95	4.0856216
Bowie	55 00 48.97	234 52 13.30	4.4069171
Montague	63 16 22.11	243 12 08.91	4.1194725
Meador	274 50 04.80	94 54 05.67	4.0497723
Saint Jo	286 37 17.02	106 39 41.46	3.8452950

JIM NED, MONTAGUE COUNTY.

On highest point of a bare, flat hill known as "Jim Ned Lookout," about 8 miles southwest from Saint Jo, 8 miles southeast from Montague Court-House, and 1 mile south of Dye post-office, in pasture owned by B. R. Raymond, who lives one-half mile southwest from station. The Dye-Bowie road passes one-eighth mile west of station. Theodolite elevated 18 feet.

Station mark: A bronze tablet cemented in sandstone post, 30 by 10 by 8 inches, set 28 inches in ground.

[Latitude 33° 36′ 47.68″. Longitude 97° 37′ 51.31″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Bowie	75 49 20.60	255 42 02.15	4.3239329
Montague	124 54 50.57	304 51 54.33	3.9998274
Mosley	196 59 57.95	17 01 14.61	4.0856216
Meador	233 59 58.68	54 05 15.87	4.2604098
Muenster	258 49 28.52	78 57 58.34	4.3833586
Jackson	280 27 32.01	100 34 01.41	4.2660752
Saint Jo	226 47 56.93	46 51 37.99	4.1489547

MONTAGUE COURT-HOUSE, MONTAGUE COUNTY.

(Not occupied.)

Station mark: Figure of Justice on tower of court-house at Montague.

[Latitude 33° 39′ 53.27″. Longitude 97° 43′ 09.46″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Mosley	243 12 08.91	63 16 22.11	4.1194725
Jim Ned	304 51 54.33	124 54 50.57	3.9998274

BOWIE, MONTAGUE COUNTY.

(Not occupied.)

Station mark: Middle of top of standpipe in town of Bowie.

[Latitude 33° 33′ 59.37″. Longitude 97° 51′ 03.82″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Mosley	234 52 13.30	55 00 48.97	4.4669171
Jim Ned	255 42 02.15	75 49 20.60	4.3239329

Primary Traverse.

In April and May, 1901, Mr. W. M. Beaman, topographer, ran a line of primary traverse southward from Bell Mountain triangulation station across the Fredericksburg and Boerne quadrangles, and connecting with the Boerne triangulation station, a linear distance of 61 miles. Three hundred and seventy transit stations were occupied, from which the following 29 geographic positions were computed:

Geographic positions along highways between Bell Mountain triangulation station and Waring.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Bell Mountain triangulation station	30 26 47.45	98 43 00.12
Fredericksburg, 14¼ miles northeast of, at forks of Bell Mountain-Fredericksburg and Bell Mountain-Willow City roads; bench-mark post, elevation 1,749 feet	30 24 40.4	98 43 44.9
Fredericksburg, 12¼ miles northeast of, at forks of Bell Mountain-Fredericksburg and Willow City-Fredericksburg roads; bench-mark post, elevation 1,826 feet	30 22 58.1	98 44 03.2
Fredericksburg, 9½ miles northeast of, north side of road near bend in fence; bench-mark post, elevation 1,953 feet	30 21 37.2	98 46 10.8
Fredericksburg, 8 miles northeast of, center of road opposite a galvanized stock tank	30 21 23.0	98 46 34.6
Fredericksburg, 6½ miles northeast of, 60 feet east of gate to Grobes's ranch; bench-mark post, elevation 1,724 feet	30 19 45.7	98 47 57.0
Fredericksburg, 4½ miles northeast of, north side of road 650 feet northeast of Palo Alto Creek; bench-mark post, elevation 1,649 feet	30 18 28.8	98 48 55.2

Geographic positions along highways between Bell Mountain triangulation station and Waring—Continued.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Fredericksburg, 2¼ miles northeast of, at forks with a settlement road running northward; bench-mark post, elevation 1,824 feet	30 17 34.6	98 50 01.1
Fredericksburg, county court-house, southeast front of; bronze tablet, elevation 1,708 feet	30 16 30.2	98 52 17.1
Fredericksburg, forks of Fredericksburg-Burnet and Fredericksburg - Comfort lower roads; temporary bench mark on telephone pole, elevation 1,665 feet	30 16 08.7	98 51 23.9
Fredericksburg, 2½ miles southeast of, on Comfort lower road; temporary bench mark, east side of road and 3 feet from fence, elevation 1,635 feet	30 14 14.9	98 50 49.9
Fredericksburg, 3 miles southeast of; milestone at forks of Fredericksburg-Austin, and lower Fredericksburg-Comfort roads, elevation 1,613 feet	30 14 31.4	98 50 28.6
Fredericksburg, 5 miles southeast of; gate southwest forks of settlement and Comfort lower road	30 12 39.1	98 50 25.8
Fredericksburg, 5½ miles southeast of; culvert between fences	30 12 19.4	98 50 08.2
Pedernales and South Grape creeks, summit of Fredericksburg and Comfort lower road between	30 10 07.1	98 49 17.3
Comfort-Luckenback and Comfort-Fredericksburg lower roads, at forks of; iron bench-mark post, elevation 1,784 feet	30 09 02.5	98 49 04.4
Gillespie and Kendall County line, stone post west side of road	30 08 33.8	98 49 03.6
Block and South Grape creeks, summit of Fredericksburg-Comfort lower road between	30 06 05.0	98 49 10.7
Forks of Comfort lower road and lane westward to Giles ranch; bench-mark post, elevation 1,611 feet	30 04 04.5	98 49 42.6
Comfort and Waring road forks, at bend in road, 1¼ miles north of; bench-mark post, elevation 1,453 feet	30 01 53.0	98 49 58.6
Comfort and Waring road forks; temporary bench mark at milestone, elevation 1,415 feet	30 00 42.0	98 50 02.6
Fredericksburg-Waring and Fredericksburg-Sisterdale road forks; iron bench-mark post, elevation 1,553 feet	29 59 41.0	98 40 04.5

Geographic positions along San Antonio and Aransas Pass Railroad.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Waring, road crossing 300 feet north of	29 57 01.2	98 48 16.0
Road crossing, 60 feet north of milepost 281	29 56 22.5	98 47 18.3
Welfare, water tank	29 54 27.2	98 47 08.9
Public road crossing, 1,135 feet north of milepost 278	29 53 57.4	98 47 06.0
Road under railroad, one-third mile north of mile post 276	29 52 31.1	98 46 18.3
Milepost 273	29 49 45.2	98 45 42.2

Geographic positions between Boerne City and Boerne triangulation station.

Station.	Latitude.	Longitude.
	° ′ ″	° ′ ″
Boerne, intersection of Main street and street to Boerne Hotel	29 47 30.9	98 43 54.2
Boerne, 1 mile southwest of; middle of lane, roads to Boerne, Bandera, and Balcones ranch	29 46 45.3	98 44 14.6
Boerne, triangulation station	29 45 27.24	98 45 30.75

MONTANA.

Secondary Triangulation Stations.

In the fall of 1900 Mr. R. H. Chapman added two new stations—Hospital and Columbia—to the local scheme at Butte, and a new station was established at Walkerville within a few feet of the site of the former one.

From these and other stations, including many "three-point" locations, numerous mines, shaft houses, tunnel mouths, and gallows frames, 100 points in all, were located in the vicinity of Butte in order to give accurate control for underground-mine maps.

The positions given are from preliminary computations only, no figure or station adjustment having been made.

HOSPITAL, SILVERBOW COUNTY.

On long smooth western slope of East Ridge, about one-fourth mile nearly due south from Boston and Montana Hospital, and 923 feet from northwest corner of collar of Atlantic shaft, which bears N. 118° 34′ 30″ E.

Station mark: An aluminum tablet cemented in granite block 30 by 8 by 8 inches, set 24 inches in the ground.

[Latitude 46° 01′ 38.36″. Longitude 112° 29′ 41.96″.]

To station—	Azimuth.	Back azimuth.	Log. distance
	° ′ ″	° ′ ″	*Meters.*
Three (Roadway)	22 02 11	202 01 24	3.59033
Walkerville	119 04 42	299 03 05	3.52146
Columbia	298 35 53	118 36 12	3.30127
Southeast Base	346 34 52	166 35 16	3.48214

COLUMBIA, SILVERBOW COUNTY.

On rocky hill about 1 mile north of Columbia Garden, on first ridge south of Horse Canyon. It is the highest point on ridge west of road from Homestake mine to Columbia Garden, and about three-fourths mile west from mine.

Station mark: An aluminum tablet cemented in rock in place.

[Latitude 46° 01′ 07.36″. Longitude 112° 28′ 20.29″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Three (Roadway)	50 31 01	230 29 13	3.62009
Big Butte	92 46 56	272 43 12	3.82855
Walkerville	118 55 19	298 52 43	3.79625
Hospital	118 36 12	298 35 53	3.30127

WALKERVILLE, SILVERBOW COUNTY.

On low summit covered with granite bowlders, one-fourth mile north of brick schoolhouse at Walkerville, and one-half mile northeast of shaft house at Alice mine. Elevation 6,463.

Station mark: An aluminum tablet cemented in granite bowlder just north (25 feet approximate) of prospect hole on "First Stake" claim and about 250 feet east of Butte-Stringtown road.

[Latitude 46° 02′ 30.66″. Longitude 112° 31′ 57.02″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters*
Big Butte	42 36 51	222 35 32	3.48500
Columbia	298 52 43	118 55 19	3.79625
Hospital	299 03 05	119 04 42	3.52146
Southeast Base	321 39 35	141 41 36	3.76493

"TUNNEL 10" PROSPECT, SILVERBOW COUNTY.

Prospect hole on highest point of hill southwest from Tunnel 10, Montana Central Railway. The ridge is a spur from "East Ridge" and is cut through by the railway tunnel.

Center of prospect hole is 4.5 feet east from position given.

[Latitude 46° 01′ 28.06″. Longitude 112° 28′ 40.08″.]

Mines located near Butte.

Name of mine.	Point located.	Latitude.	Longitude.
		° ′ ″	° ′ ″
Gopher	West post of gallows frame	46 00 51.77	112 31 05.04
Nora	West post of gallows frame	46 00 53.63	112 31 03.01
Iduna	West post of gallows frame	46 00 47.73	112 31 09.02
Shaft at northeast corner of South Gaylord and East Mercury streets.	Middle of gallows frame	46 00 51.16	112 31 12.88
Westlake	North post of gallows frame	46 00 51.38	112 31 09.37
Shaft on lot east of No. 432 East Park street.	East post of gallows frame	46 00 54.72	112 31 37.62
Oneida	East post of gallows frame	46 00 50.06	112 30 47.04
Pat Wall & Co	West post of gallows frame	46 00 47.76	112 30 45.99
Neva	West post of gallows frame	46 00 47.25	112 30 42.75
Bell	Center of gallows frame	46 01 35.96	112 31 22.80
Shaft at northeast corner of North Atlantic and East Galena streets.	West post of gallows frame	46 00 53.55	112 31 24.36
Monita	West post of gallows frame	46 00 48.07	112 30 53.07
West Stewart	West post of gallows frame	46 01 12.88	112 32 07.27
Anaconda	Middle of gallows frame	46 01 11.08	112 31 24.71
Diamond	Flagstaff over shaft	46 01 36.96	112 31 27.63
Neversweat	Middle of gallows frame	46 01 08.84	112 31 34.02
J. I. C	Middle of gallows frame	46 00 43.71	112 31 00.32
Little Rosa	Middle of gallows frame	46 01 01.45	112 31 25.52
Widow Reed (owner)	Middle of gallows frame	46 01 00.06	112 31 02.65
St. Lawrence	Middle of gallows frame	46 01 08.75	112 31 11.26
St. Lawrence	Middle of big ventilator	46 01 11.94	112 31 11.40
Mine south of Mountain View.	Middle of gallows frame	46 01 11.58	112 31 06.06
Boston and Montana No. 7.	Middle of gallows frame	46 01 05.74	112 29 14.63
Belmont	Ventilator shaft	46 00 48.23	112 31 20.42

Mines located near Butte—Continued.

Name of mine.	Point located.	Latitude.	Longitude.
		° ′ ″	° ′ ″
Modoc	Middle of hood on shaft house	46 01 31.27	112 30 49.92
West Colusa	Middle of gallows frame	46 01 23.74	112 30 43.04
Minnie Healy	Middle frame over southeast shaft.	46 01 18.13	112 30 32.50
Minnie Healy	Middle frame over northwest shaft.	46 01 18.85	112 30 33.51
Leonard	Flagstaff	46 01 22.21	112 30 30.92
East Colusa	Middle comb on shaft house	46 01 26.49	112 30 25.27
Bordeaux	Middle of gallows frame	46 01 28.93	112 30 02.80
Speculator	Middle of gallows frame	46 01 39.52	112 31 09.61
L. E. R	Middle of gallows frame	46 01 17.20	112 31 26.07
Humboldt	Ventilator	46 01 23.94	112 32 19.19
Buffalo	Middle comb on shaft house	46 01 29.64	112 32 12.50
Mountain Con No. 2	Flagstaff	46 01 30.70	112 31 56.48
West Grayrock	Intersection of gables on shaft house.	46 01 42.14	112 31 44.21
Green Mountain	Flagstaff	46 01 33.37	112 31 41.90
Wake-up-Jim	Middle comb on shaft house	46 01 33.20	112 31 35.52
Nipper	Middle frame of vertical shaft	46 01 14.22	112 31 44.07
Nipper	Middle frame at top of incline shaft.	46 01 14.98	112 31 46.74
Little Mina	South ventilator	46 01 17.96	112 31 50.78
Gagnon	Flagstaff	46 01 08.84	112 32 19.53
Josephine	Middle of west gallows frame	46 01 49.00	112 31 58.99
Magna Charta	Flagstaff	46 02 07.02	112 31 56.26
Lilly	Middle of gallows frame	46 01 07.98	112 28 58.70
"Doc" Wierhurst (owner).	Stack, tunnel south of Columbia garden.	46 00 17.40	112 27 29.06
Valdemere	Flagstaff	46 02 06.02	112 31 44.25
Moose	Flagstaff	46 02 01.46	112 31 40.46
East Grayrock	Flagstaff	46 01 38.32	112 31 30.76
Poulin	Flagstaff	46 01 26.93	112 32 23.94
Highore No. 2	Middle of gallows frame	46 01 26.22	112 31 09.52
Ramsdell Parrot	Peak of gallows frame	46 01 06.36	112 31 37.67
Colusa Parrot	Flagstaff	46 01 06.31	112 31 40.02
Sirius	Middle of gallows frame	46 01 32.12	112 30 30.34
Balaklava	Middle of gallows frame	46 01 34.30	112 30 38.54
Mountain Chief	Middle of gallows frame	46 01 36.50	112 30 39.82
Sioux Chief	Middle of gallows frame	46 01 39.36	112 30 51.90
Old Joe (fraction)	Ventilator	46 01 39.02	112 31 00.96
Adirondack	Middle of gallows frame	46 01 41.20	112 31 09.14

Mines located near Butte—Continued.

Name of mine.	Point located.	Latitude.			Longitude.		
		°	′	″	°	′	″
Tycoon	Middle of gallows frame	46	01	42.74	112	31	17.12
Speculator No. 6	Middle of gallows frame	46	01	41.92	112	31	25.40
Gem	Ventilator	46	01	48.44	112	30	54.71
Wild Bill	Middle of gallows frame	46	01	42.94	112	31	27.50
Cora (east)	Ventilator	46	01	47.46	112	31	38.14
Atlantic	Northwest corner of shaft collar.	46	01	33.87	112	29	30.57
Star	Middle comb of shaft house	46	01	28.29	112	32	18.08
Tramway	Ventilator	46	01	11.82	112	30	32.70
Mountain View	Middle of gallows frame	46	01	16.55	112	31	05.76
Parnell	Middle of gallows frame	46	01	20.67	112	31	19.92
Stewart	Middle of gallows frame	46	01	13.00	112	31	53.56
Original	Flagstaff	46	01	08.66	112	32	16.68
Parrot	Middle of gallows frame	46	01	06.98	112	31	35.85
Washoe	Middle of cupola	46	01	04.95	112	31	57.58
Bluejay	Middle of gallows frame	46	01	02.65	112	31	48.52
Moonlight	Middle of gallows frame	46	01	01.31	112	31	32.74
Sarsfield	Middle of gallows frame	46	01	00.32	112	28	53.00
Bellona	Middle of gallows frame	46	01	01.92	112	31	36.96
Amazon	Middle of gallows frame	46	00	22.36	112	28	51.40
Altona	Middle of gallows frame	46	00	21.02	112	28	46.04
Homestake	Ventilator	46	01	25.38	112	27	57.53
Clinton	Boiler stack at tunnel	46	01	29.32	112	27	50.12
B. & M. No. 4	Middle of gallows frame	46	01	38.29	112	30	06.54
Sinbad	Middle of gallows frame	46	01	23.28	112	29	16.30
Bill Moran (owner)	Middle of gallows frame	46	00	11.22	112	28	39.60
Glass Bros	Middle frame of shaft	46	00	43.48	112	30	09.48
Rarus	Vertical bolt in middle of stay frame east of shaft.	46	01	07.24	112	30	43.41
Glengary	Middle of gallows frame	46	00	44.60	112	30	44.80
Shaft west of south of Anaconda mine.	Middle of ventilator	46	01	04.28	112	31	28.25
Mine southeast of Neversweat shaft.	Middle of gallows frame	46	01	06.03	112	31	31.01
Silverbow	Ventilator	46	00	53.90	112	30	42.20
Silverbow No. 3	Flagstaff	46	00	44.59	112	30	36.28
Berkeley	Flagstaff	46	01	02.12	112	30	37.10
Pennsylvania	Middle of gallows frame	46	00	59.28	112	30	53.77

UTAH-WYOMING.

Triangulation Stations.

The following stations form a belt of quadrilaterals which starts from a line of the United States Coast and Geodetic Survey station Deseret-Nebo, and extends northeasterly and then easterly along the forty-first parallel of latitude through the Uinta Forest Reserve. Nine of these stations were published in the Nineteenth and the remainder in the Twentieth Annual Report of the United States Geological Survey. All the positions have been recomputed and based on the "U. S. Standard" datum, and are now republished with corrected values.

NEBO, JUAB COUNTY, UTAH.

[Latitude 39° 48′ 39.11″. Longitude 111° 45′ 56.92″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Deseret	134 47 27.68	314 14 12.20	5.0118874
Timpanogos	189 49 32.25	9 54 33.61	4.8107167
Spanish Fork Peak	213 26 56.70	33 36 08.50	4.5674464

DESERET, TOOELE COUNTY, UTAH.

[Latitude 40° 27′ 35.30″. Longitude 112° 37′ 32.55″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Timpanogos	275 20 54.42	95 59 25.06	4.9264460
Spanish Fork Peak	293 28 17.08	114 10 51.86	5.0092198
Nebo	314 14 12.20	134 47 27.68	5.0118874

TIMPANOGOS, UTAH COUNTY, UTAH.

[Latitude 40° 23′ 04.92″. Longitude 111° 38′ 09.04″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Nebo	9 54 33.61	189 49 32.25	4.8107167
Deseret	95 59 25.06	275 20 54.42	4.9364460
Clayton	195 47 43.75	15 50 42.67	4.3766781
Kamas	227 15 07.05	47 32 13.42	4.7082109
Currant Creek Peak	270 51 37.53	91 09 34.01	4.5932849
Spanish Fork Peak	344 15 55.66	164 20 08.53	4.5840282

SPANISH FORK PEAK, UTAH COUNTY, UTAH.

[Latitude, 40° 05′ 17.46″. Longitude, 111° 31′ 37.56″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Nebo	33 36 08.50	213 26 56.70	4.5674464
Deseret	114 10 51.86	293 28 17.08	5.0092198
Timpanogos	164 20 08.53	344 15 55.66	4.5840282
Kamas	202 33 01.42	22 45 51.01	4.8616269
Currant Creek Peak	222 51 16.76	43 04 57.11	4.6439550
Strawberry	275 25 26.49	95 46 24.82	4.6678909
Grey Head	280 38 47.28	101 10 20.60	4.8518116
Indian Head	293 26 04.72	113 50 13.17	4.7662870

CURRANT CREEK PEAK, WASATCH COUNTY, UTAH.

[Latitude, 40° 22′ 42.51″. Longitude, 111° 10′ 27.48″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Spanish Fork Peak	43 04 57.11	222 51 16.76	4.6439550
Timpanogos	91 09 34.01	270 51 37.53	4.5932849
Clayton Peak	125 59 02.55	305 44 02.70	4.6050691
Wanship	154 05 48.90	333 53 53.12	4.7704972
Kamas	176 49 22.38	356 48 28.80	4.5431299
Grey Head	318 55 39.11	139 13 38.95	4.7815030
Peak	323 24 40.00	143 40 47.00	4.7763501
Strawberry	336 10 21.58	156 17 43.70	4.6040241

CLAYTON PEAK, AT CORNER OF SUMMIT, SALT LAKE, AND WASATCH COUNTIES, UTAH.

[Latitude 40° 35′ 27.46″. Longitude 111° 33′ 33.48″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Timpanogos	15 50 42.67	195 47 43.75	4.3766781
Wanship	192 51 38.26	12 54 45.17	4.4792754
Porcupine	218 28 39.76	38 46 17.17	4.7836351
Kamas	249 40 20.57	69 54 29.61	4.5137508
Currant Creek Peak	305 44 02.70	125 59 02.55	4.6050691

KAMAS, SUMMIT COUNTY, UTAH.

[Latitude 40° 41′ 33.01″. Longitude 111° 11′ 49.91″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Spanish Fork Peak	22 45 51.01	202 33 01.42	4.8516269
Timpanogos	47 32 13.42	227 15 07.05	4.7032109
Clayton Peak	69 54 29.61	249 40 20.57	4.5137506
Wanship	127 18 26.73	307 07 22.51	4.4763953
Porcupine	191 28 34.44	11 32 00.20	4.5674671
Medicine Butte	198 17 51.24	18 29 16.19	4.8880062
La Motte Peak	256 19 48.60	76 37 15.85	4.5880639
Currant Creek Peak	356 48 28.80	176 49 22.38	4.5431299

WANSHIP, ON BOUNDARY LINE BETWEEN SUMMIT AND MORGAN COUNTIES.

[Latitude 40° 51′ 20.24″. Longitude 111° 28′ 46.97″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Clayton Peak	12 54 45.17	192 51 38.26	4.4792754
Medicine Butte	220 51 58.21	41 14 32.92	4.8645769
Porcupine	239 44 46.60	59 59 19.11	4.5565221
Elizabeth Mountain	257 40 58.82	78 10 26.43	4.8101140
La Motte Peak	278 08 42.73	98 37 16.48	4.7931848
Kamas	307 07 22.51	127 18 26.73	4.4763953
Currant Creek Peak	333 53 53.12	154 05 48.90	4.7704972

PORCUPINE, SUMMIT COUNTY, UTAH.

[Latitude 40° 01′ 06.39″. Longitude 111° 06′ 35.88″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Kamas	11 32 00.20	191 28 34.44	4.5674671
Clayton Peak	38 46 17.17	218 28 39.76	4.7836351
Wanship	59 59 19.11	239 44 46.60	4.5565221
Medicine Butte	204 31 22.53	24 39 22.57	4.6109744
Elizabeth Mountain	278 01 22.26	98 16 19.18	4.5089383
La Motte Peak	311 49 13.93	132 03 18.71	4.6085751

LA MOTTE PEAK, SUMMIT COUNTY, UTAH.

[Latitude 40° 46′ 26.67″. Longitude 110° 45′ 05.04″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Kamas	76 37 15.85	256 19 48.60	4.5880839
Wanship	98 37 16.48	278 08 42.73	4.7931848
Porcupine	132 03 18.71	311 49 13.93	4.6085751
Medicine Butte	168 31 24.33	348 25 15.56	4.8168173
Elizabeth Mountain	184 33 11.98	4 34 02.28	4.3547610
Bridger Butte	202 30 52.24	22 42 12.37	4.7989716
Gilbert Peak	260 50 54.64	81 07 03.28	4.5463910

ELIZABETH MOUNTAIN, SUMMIT COUNTY, UTAH.

[Latitude 40° 58′ 38.09″. Longitude 110° 43′ 48.18″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
La Motte Peak	4 34 02.28	184 33 11.98	4.3547610
Wanship	78 10 26.43	257 40 58.82	4.8101140
Porcupine	98 16 19.18	278 01 22.26	4.5089383
Medicine Butte	160 25 21.23	340 18 21.14	4.6461719
Bridger Butte	212 05 39.46	32 16 10.43	4.6232448
Sage Creek	248 57 50.75	69 21 36.34	4.7341364
Gilbert Peak	297 15 45.93	117 31 06.26	4.5688482

MEDICINE BUTTE, UINTA COUNTY, WYO.

[Latitude 41° 21′ 09.90″. Longitude 110° 54′ 26.39″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Kamas	18 29 16.19	198 17 51.24	4.8880052
Porcupine	24 39 22.57	204 31 22.53	4.6109744
Wanship	41 14 32.92	220 51 58.21	4.8645769
Bridger Butte	279 15 39.35	99 33 14.11	4.5758129
Gilbert Peak	320 44 12.65	141 06 35.92	4.8789648
Elizabeth Mountain	340 18 21.14	160 25 21.23	4.6461719
La Motte Peak	348 25 15.56	168 31 24.33	4.8168173

BRIDGER BUTTE, UINTA COUNTY, WYO.

[Latitude 41° 17′ 50.40″. Longitude 110° 27′ 49.07″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
La Motte Peak	22	42	12.37	202	30	52.24	4.7989716
Elizabeth Mountain	32	16	10.43	212	05	39.46	4.6232448
Medicine Butte	99	33	14.11	279	15	39.35	4.5758129
Sage Creek	299	51	00.03	120	04	18.12	4.5126707
Gilbert Peak	348	44	47.41	168	49	40.71	4.7293086

GILBERT PEAK, ON LINE BETWEEN WASATCH AND SUMMIT COUNTIES, UTAH.

[Latitude 40° 49′ 25.45″. Longitude 110° 20′ 22.56″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
La Motte Peak	81	07	03.28	260	50	54.64	4.5463910
Elizabeth Mountain	117	31	06.26	297	15	45.93	4.5688482
Medicine Butte	141	06	35.92	320	44	12.65	4.8789648
Bridger Butte	168	49	40.71	348	44	47.41	4.7293086
Sage Creek	206	07	18.94	26	15	40.40	4.6073643
Turtle Bluff	218	40	53.40	38	51	45.65	4.5701299
Widdop	235	56	47.98	56	07	25.77	4.4393071
Phil Pico	244	49	20.32	65	05	47.90	4.5907433
North Burro	260	49	03.06	80	55	32.98	4.1507944
Leidy Peak	278	00	01.68	98	19	51.90	4.6349144
Marsh Peak	285	57	57.66	106	18	00.22	4.6528536

SAGE CREEK, UINTA COUNTY, WYO.

[Latitude 41° 09′ 03.30″. Longitude 110° 07′ 38.02″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
North Burro	6	35	39.39	186	33	49.02	4.5354837
Gilbert Peak	26	15	40.40	206	07	18.94	4.6073643
Elizabeth Mountain	69	21	36.34	248	57	50.75	4.7341364
Bridger Butte	120	04	18.12	299	51	00.03	4.5126707
Phil Pico	318	43	47.07	138	51	55.70	4.4210797
Turtle Bluff	323	48	45.24	143	51	16.87	3.9597700
Widdop	346	50	12.14	166	52	29.89	4.3331520

TURTLE BLUFF, UINTA COUNTY, WYO.

[Latitude 41° 05′ 04.76″. Longitude 110° 03′ 47.44″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Widdop	2 03 07.42	182 02 53.73	4.1342101
Gilbert Peak	38 51 45.65	218 40 53.40	4.5701299
Sage Creek	143 51 16.87	323 48 45.24	3.9597700
Phil Pico	316 05 50.87	136 11 27.82	4.2382357
Milepost 314	344 06 02.80	164 07 20.11	4.0021400
Milepost 315	353 18 40.62	173 19 12.48	3.9883851

WIDDOP, SUMMIT COUNTY, UTAH.

[Latitude 40° 57′ 43.48″. Longitude 110° 04′ 08.30″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
North Burro	34 01 37.55	213 57 30.09	4.1992517
Gilbert Peak	56 07 25.77	235 56 47.98	4.4393071
Sage Creek	166 52 29.87	346 50 12.14	4.3831520
Turtle Bluff	182 02 53.73	2 03 07.42	4.1342101
Milepost 314	219 22 54.67	39 24 25.56	3.7081856
Phil Pico	264 46 20.88	84 52 11.10	4.0983480
Leidy Peak	317 12 08.38	137 21 22.82	4.4661622

NORTH BURRO, SUMMIT COUNTY, UTAH.

[Latitude 40° 50′ 38.23″. Longitude 110° 10′ 26.23″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Gilbert Peak	80 55 32.98	260 49 03.06	4.1507944
Sage Creek	186 33 49.02	6 35 39.39	4.5354837
Widdop	213 57 30.09	34 01 37.55	4.1992517
Phil Pico	236 11 30.26	56 21 27.54	4.4093534
Leidy Peak	286 08 29.01	106 21 49.80	4.4759231

MILEPOST 315, UTAH–WYOMING.

[Latitude 40° 59′ 51.29″. Longitude 110° 02′ 58.92″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Turtle Bluff	173 19 12.48	353 18 40.62	3.9883851
Milepost 314	269 50 10.40	89 50 55.84	3.2092432
Phil Pico	284 27 35.04	104 32 39.87	4.0500968

UINTA, SWEETWATER COUNTY LINE, INITIAL POINT, WYOMING.

[Latitude 40° 59′ 51.30″. Longitude 110° 02′ 54.85″.]

MILEPOST 314, UTAH–WYOMING.

[Latitude 40° 59′ 51.43″. Longitude 110° 01′ 49.65″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Widdop	39 24 25.56	219 22 54.67	3.7081856
Milepost 315	89 50 55.84	269 50 10.40	3.2092432
Turtle Bluff	164 07 20.11	344 06 02.80	4.0021400
Phil Pico	286 53 46.33	106 58 05.74	3.9851925

PHIL PICO, UINTA COUNTY, UTAH.

[Latitude 40° 58′ 20.18″. Longitude 109° 55′ 14.14″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
North Burro	56 21 27.54	236 11 30.26	4.4093534
Gilbert Peak	65 05 47.90	244 49 20.32	4.5907433
Widdop	84 52 11.10	207 28 30.66	4.0983480
Milepost 315	104 32 39.87	284 27 35.04	4.0500968
Milepost 314	106 58 05.74	286 53 46.33	3.9851925
Turtle Bluff	136 11 27.82	316 05 50.87	4.2382357
Sage Creek	138 51 55.70	318 43 47.07	4.4210797
Twin Buttes	218 14 15.28	38 22 46.53	4.4668992
Richards Butte	264 33 43.08	84 57 58.50	4.7166557
Lena	295 34 16.38	115 54 08.97	4.6754428
Trout Creek Peak	318 53 50.69	139 02 11.33	4.4358754
Leidy Peak	342 00 22.18	162 03 47.16	4.3762588
Marsh Peak	344 53 55.73	164 57 33.64	4.4774312

LEIDY PEAK, UINTA COUNTY, UTAH.

[Latitude 40° 46′ 06.79″. Longitude 109° 50′ 00.89″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Gilbert Peak	98 19 51.90	278 00 01.68	4.6349144
North Burro	106 21 49.80	286 08 29.01	4.4759231
Widdop	137 21 22.82	317 12 08.38	4.4661622
Phil Pico	162 03 47.16	342 00 22.18	4.3762588
Trout Creek Peak	259 02 24.06	79 07 19.08	4.0329170
Lena	266 32 16.83	86 48 42.36	4.5495441
Marsh Peak	355 47 36.34	175 47 49.36	3.8050251

MARSH PEAK, UINTA COUNTY, UTAH.

[Latitude 40° 42′ 40.42″. Longitude 109° 49′ 40.94″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Gilbert Peak	106 18 00.22	285 57 57.66	4.6528536
Phil Pico	164 57 33.64	344 53 55.73	4.4774312
Leidy Peak	175 47 49.36	355 47 36.34	3.8050251
Twin Buttes	191 16 48.14	11 21 39.70	4.7243835
Trout Creek Peak	230 15 37.15	50 20 18.97	4.1194058
Richards Butte	232 26 46.63	52 47 20.28	4.7448761
Lena	256 18 37.30	76 34 49.24	4.5554878
Little Mountain	330 16 33.05	150 21 36.00	4.3440832

TROUT CREEK PEAK, UINTA COUNTY, UTAH.

[Latitude 40° 47′ 13.03″. Longitude 109° 42′ 29.19″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Marsh Peak	50 20 18.97	230 15 37.15	4.1194058
Leidy Peak	79 07 19.08	259 02 24.06	4.0329170
Phil Pico	139 02 11.33	318 53 50.69	4.4358754
Little Mountain	358 21 41.82	178 22 03.68	4.4410184

TWIN BUTTES, SWEETWATER COUNTY, WYO.

[Latitude 41° 10′ 45.54″. Longitude 109° 42′ 16.05″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Marsh Peak	11 21 39.70	191 16 48.14	4.7243895
Phil Pico	38 22 46.53	218 14 15.28	4.4668992
Richards Butte	298 20 57.24	118 36 44.26	4.5826379
Lena	330 38 27.97	150 49 52.43	4.6983833

RICHARDS BUTTE, SWEETWATER COUNTY, WYO.

[Latitude 41° 00′ 54.25″. Longitude 109° 18′ 15.37″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Lena	20 10 09.52	200 05 49.86	4.4308414
Marsh Peak	52 47 20.28	232 26 46.63	4.7448761
Phil Pico	84 57 58.50	264 33 43.03	4.7166557
Twin Buttes	118 36 44.26	298 20 57.24	4.5826379

LENA, UINTA COUNTY, UTAH.

[Latitude 40° 47′ 13.44″. Longitude 109° 24′ 51.94″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Little Mountain	41 08 57.10	220 57 50.04	4.5636299
Marsh Peak	76 34 49.24	256 18 37.30	4.5554878
Leidy Peak	86 48 42.36	266 32 16.83	4.5495441
Phil Pico	115 54 08.97	295 34 16.38	4.6754428
Twin Buttes	150 49 52.43	330 38 27.97	4.6983833
Richards Butte	200 05 49.86	20 10 09.52	4.4308414

LITTLE MOUNTAIN, UINTA COUNTY, UTAH.

[Latitude 40° 32′ 18.40″. Longitude 109° 41′ 55.65″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Marsh Peak	150 21 36.00	330 16 33.05	4.3440832
Trout Creek Peak	178 22 03.68	358 21 41.82	4.4410134
Lena	220 57 50.04	41 08 57.10	4.5636299

STRAWBERRY, WASATCH COUNTY, UTAH.

[Latitude 40° 02′ 50.21″. Longitude 110° 59′ 02.69″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Spanish Fork Peak	95 46 24.82	275 25 26.49	4.6678909
Currant Creek Peak	156 17 43.70	336 10 21.58	4.6040241
Grey Head	290 42 49.22	110 53 25.10	4.3996083
Peak	300 11 14.91	120 19 59.04	4.3501804
Indian Head	339 20 18.91	159 23 31.16	4.3044758

INDIAN HEAD, NEAR THE COUNTY LINE BETWEEN UTAH AND WASATCH COUNTIES, UTAH.

[Latitude 39° 52′ 38.52″. Longitude 110° 54′ 03.36″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Spanish Fork Peak	113 50 13.17	293 26 04.72	4.7662870
Strawberry	159 23 31.16	339 20 18.91	4.3044758
Peak	238 13 36.16	58 19 07.32	4.1587604
Grey Head	238 39 17.42	58 46 40.08	4.2825707

GREY HEAD, WASATCH COUNTY, UTAH.

[Latitude 39° 58′ 01.24″. Longitude 110° 42′ 33.58″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Indian Head	58 46 40.08	238 39 17.42	4.2825707
Peak	60 04 27.00	240 02 36.00	3.6772294
Spanish Fork Peak	101 10 20.60	280 38 47.23	4.8518116
Strawberry	110 53 25.10	290 42 49.22	4.3996083
Currant Creek Peak	139 13 38.95	318 55 39.11	4.7815030

PEAK (SECONDARY POINT), WASATCH COUNTY, UTAH.

[Latitude 39° 56′ 44.28″. Longitude 110° 45′ 27.22″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Indian Head	58 19 07.3	238 13 36.1	4.1587604
Strawberry	120 19 59.0	300 11 14.9	4.3501804
Currant Creek Peak	143 40 47.0	323 24 40.0	4.7763501
Grey Head	240 02 36.0	60 04 27.0	3.6772294

WYOMING, SOUTHWEST CORNER STONE.

[Latitude 40° 59′ 53.48″. Longitude 111° 02′ 56.67″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Porcupine	112 50 36	292 48 06	3.7638576

PACIFIC SECTION OF TOPOGRAPHY.

IDAHO.

Triangulation Stations.

In order to control the Coeur d'Alene mining district triangulation was extended eastward from Chilco and Skalan in June, 1900, by Mr. C. F. Urquhart, topographer. Five new stations were occupied.

STEVENS, SHOSHONE COUNTY.

On line between Shoshone County, Idaho, and Missoula County, Mont., on a well-known mountain about 5 miles south of Mullan, Idaho. There is a good trail from Mullan to the station.

Station mark: The lone signal tree, about 45 feet south of highest point of mountain.

Reference mark: A copper bolt marked "U. S. G. S." set in solid rock 45 feet from signal tree. Azimuth from signal to bolt 167° 45′.

[Latitude 47° 25′ 29.39″. Longitude 115° 46′ 26.26″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Latour	91 27 22.97	271 01 20.43	4.6481338
Kellogg	104 51 23.76	284 35 39.87	4.4432141
Chilco	132 37 45.67	312 04 10.16	4.8864328
Rocky	143 44 46.29	323 30 47.10	4.6028676
Murray	170 37 01.65	350 34 28.86	4.4233365

MURRAY, SHOSHONE COUNTY.

(Not occupied.)

On highest point of mountain 3 miles north of Murray and reached by a trail from that town.

Station mark: A copper bolt set in solid rock, over which is a rock monument.

[Latitude 47° 39′ 36.10″. Longitude 115° 49′ 53.36″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Kellogg	49 43 18.52	229 30 05.72	4.4693979
Latour	58 01 20.20	237 37 47.52	4.6748654
Rocky	107 36 27.05	287 24 59.43	4.3082328
Chilco	116 22 22.58	295 51 16.67	4.7665873

ROCKY, SHOSHONE COUNTY.

(Not occupied.)

The highest point of a high, rocky mountain, on north fork of Coeur d'Alene River.

Station mark: Summit of peak.

[Latitude 47° 42′ 54.21″. Longitude 116° 05′ 23.22″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Kellogg	6 49 33.70	186 47 47.23	4.4047370
Latour	33 25 24.87	213 13 17.95	4.5736341
Skalan	81 37 53.23	260 57 58.06	4.8349247
Chilco	120 48 15.23	300 28 37.39	4.5849139
Murray	287 24 59.43	107 36 27.05	4.3082328
Stevens	323 30 47.10	143 44 46.29	4.6028676

KELLOGG, SHOSHONE COUNTY.

A well-known mountain about 3 miles south from Wardner, reached by a good trail from that town.

Station mark: The lone fir signal tree on northeast end of summit.

Reference mark: A copper bolt marked "U. S. G. S." set in rock 20.1 feet from signal tree. Azimuth from tree to bolt is 89° 25′.

[Latitude 47° 29′ 17.77″. Longitude 116° 07′ 47.40″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Latour	71 00 10.77	250 49 51.40	4.2702192
Skalan	103 15 21.92	282 37 17.47	4.8222362
Chilco	146 13 00.71	325 55 11.60	4.7324703
Rocky	186 47 47.23	6 49 33.70	4.4047370
Murray	229 30 05.72	49 43 18.52	4.4693979
Stevens	284 35 39.87	104 51 23.76	4.4432141

LATOUR, KOOTENAI COUNTY.

On the highest peak of the high mountain near the head of Latour Creek, about 3 miles south of the well-known point called "Baldy." There is a trail up Latour Creek to mouth of Rocky Creek, thence up ridge on north side of Rocky Creek, around the head of same to station.

Station mark: A copper bolt marked "U. S. G. S." set in solid rock, surmounted by a rock monument 7 feet in height.

[Latitude 47° 26′ 00.54″. Longitude 116° 21′ 48.00″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Skalan	114 11 17.60	293 43 34.19	4.7128285
Chilco	166 07 57.68	346 00 30.41	4.7197069
Rocky	213 13 17.95	33 25 24.87	4.5736341
Murray	237 37 47.52	58 01 20.20	4.6748654
Kellogg	250 49 51.40	71 00 10.77	4.2702192
Stevens	271 01 20.43	91 27 22.97	4.6481338

WASHINGTON.

Triangulation Stations.

Triangulation in north-central Washington was extended westward from the 119th meridian to the 120th meridian, controlling four 30-minute quadrangles and connecting the work based upon the Spokane astronomic station and base with that based upon Ellensburg. Six new and five old stations were occupied during the season of 1900 by Mr. C. F. Urquhart, topographer.

KELLER, FERRY COUNTY.

On the highest point on range of mountains about 7 miles (air line) west from Keller post-office. To reach station take trail from Keller to Nespalem, and at 7 miles from former take trail running northwest up small dry creek, thence up the ridge.

Station mark: A fir tree about 50 feet high, trimmed up.

Reference mark: A copper bolt set in large rock (18 or 20 feet high) 33.6 feet north of tree.

[Latitude 48° 03′ 39.93″. Longitude 118° 47′ 48.89″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Salt Lake	108 05 26.64	287 31 18.60	4.7760002
Omach	138 42 51.92	318 19 52.78	4.7601759
Moses	150 19 12.87	330 07 19.51	4.5994835
Paint Rock	208 13 28.45	28 26 41.31	4.6646604
Whitestone	281 30 34.12	101 43 20.40	4.3380503

TONK, OKANOGAN COUNTY.

On the highest point of mountain on the north side of Tonk Creek, a small stream that empties into the Okanogan River, a little south from Riverside post-office. The station can be easily reached from the south side, which is covered with bunch grass nearly to the summit.

Station mark: A lone fir tree 18 feet high about 20 feet north of highest point.

Reference mark: A copper bolt marked "U. S. G. S." set in large rock 17.6 feet S. 3° E. from tree.

[Latitude 48° 32′ 43.23″. Longitude 119° 14′ 15.36.″]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Omach	26 40 32.95	206 37 16.77	4.0787940
Bonaparte	197 27 31.35	17 32 39.77	4.4663412
Fir	238 59 51.86	59 13 24.89	4.4128438
Moses	326 08 28.00	146 16 19.39	4.3666952

OMACH, OKANOGAN COUNTY.

On the highest peak on ridge between Tonk and Omach creeks, at the head of Similkin Creek, a small stream flowing into the Okanogan River parallel to Omach Creek. The peak is about 6 miles east of the Okanogan River and can best be ascended from the south and west sides. All timber has been cut from the summit of mountain.

Station mark: A copper bolt marked "U. S. G. S." set in solid rock, above which a rock monument was erected.

[Latitude 48° 26′ 56.31″. Longitude 119° 18′ 37.30″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Salt Lake	36 49 35.99	216 38 22.64	4.4918667
Buck	88 04 23.29	267 41 20.68	4.5811673
Lemanasky	144 50 59.09	324 36 59.53	4.6022378
Bonaparte	200 10 04.43	20 18 29.15	4.6001909
Tonk	206 37 16.77	26 40 32.95	4.0787940
Fir	228 50 52.45	49 07 41.26	4.5631331
Moses	295 04 43.11	115 15 50.06	4.3066980
Keller	318 19 52.78	138 42 51.92	4.7601759

SALT LAKE, OKANOGAN COUNTY.

On a low timbered hill 5 or 6 miles east from Molett, on west side of Okanogan River and 13 miles southeast from Alma post-office and ferry. The hill is the highest point in the immediate vicinity and has salt lakes on every side of it.

Station mark: A pine tree trimmed up for signal.

Reference mark: A copper bolt marked "U. S. G. S." set in solid rock 21 feet west from tree.

[Latitude 48° 13′ 31.03″. Longitude 119° 33′ 38.62″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Buck	140	12	24.31	320	00	28.29	4.4854816
Omach	216	38	22.64	36	49	35.99	4.4918667
Moses	246	04	17.57	66	26	36.30	4.6060805
Keller	287	31	18.60	108	05	26.64	4.7760002

LEMANASKY, OKANOGAN COUNTY.

On the highest point on ridge between the Okanogan River and Sinlohegan Creek, about 17 miles from Conconully and 8 miles south from Loomis. The road from Conconully to Lemanasky Lake goes within 2 miles of mountain. All timber has been cut from summit except on north side.

Station mark: A bronze tablet cemented in solid rock, above which was erected a rock cairn 7 feet high.

[Latitude 48° 44′ 34.06″. Longitude 119° 37′ 24.94″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Buck	23	39	30.89	203	30	26.39	4.5703951
Tiffany	70	24	16.66	250	10	17.61	4.3847799
Chapaca (2)	156	58	50.42	336	53	14.31	4.3661596
Bonaparte	262	31	57.97	82	54	31.81	4.5689617
Fir	279	28	30.68	99	59	28.98	4.7102014
Moses	314	42	29.04	135	07	42.81	4.7669900
Omach	324	36	59.53	144	50	59.09	4.6022378

CHAPACA (2), OKANOGAN COUNTY.

(Not occupied.)

A sharp rocky peak 8 or 10 miles a little north of west from Loomis; the flat ridge about 2 miles west is higher.

Station mark: Summit of peak.

[Latitude 48° 56′ 06.12″. Longitude 119° 44′ 51.38″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Lemanasky	336 53 14.31	156 58 50.42	4.3661596
Tiffany	24 54 10.88	204 45 46.51	4.5128241

BUCK, OKANOGAN COUNTY.

A round, timbered mountain, locally known as Buck Mountain, on the divide between Okanogan and Methow rivers. It is the most southeastern high point on ridge and is at the head of Johnson and Sweat creeks. The road between Twisp and Conconully passes about 4 miles south from station at the point where it crosses Sweat Creek, 17 miles from Twisp. From this point horses can be ridden to station. It is difficult to reach from north and west sides.

Station mark: The lone pine signal tree, 20 feet high.

Reference mark: An aluminum bolt, marked "U. S. G. S.," set in rock. Azimuth from tree 134° 09′, distance 5.9 feet.

[Latitude 48° 26′ 10.72″. Longitude 119° 49′ 30.94″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Lookout	63 07 29.09	242 51 10.72	4.4804841
Tiffany	162 50 58.70	342 46 05.81	4.4831645
Lemanasky	203 30 26.39	23 39 30.89	4.5703951
Bonaparte	232 53 29.34	53 25 04.68	4.8106748
Fir	248 30 00.29	69 09 58.40	4.8473307
Omach	267 41 20.68	88 04 23.29	4.5811673
Moses	276 59 28.07	97 33 41.19	4.7552967
Salt Lake	320 00 28.29	140 12 24.31	4.4854816

TIFFANY, OKANOGAN COUNTY.

A round, bare, double-topped mountain, lying in the main range between the Okanogan and Methow rivers at the head of Boulder Creek, which is the first tributary of any size of the Chewach River above Winthrop. The station is on the higher and more southerly summit of mountain.

Station mark: A hole drilled 6 inches deep in solid rock on highest point, over which was erected a rock cairn 8 feet high.

[Latitude 48° 40′ 09.23″. Longitude 119° 56′ 01.69″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Lookout	25 32 01.12	205 20 33.59	4.6423317
Chapaca (2)	204 45 46.51	24 54 10.88	4.5128241
Lemanasky	250 10 17.61	70 24 16.66	4.3847799
Moses	296 53 56.32	117 33 05.90	4.8595761
Buck	342 46 05.81	162 50 58.70	4.4331645

LOOKOUT, OKANOGAN COUNTY.

A round-topped, bunch-grass hill, partly timbered on northwest slope, lying on west side of Methow River between Twisp and Lydle creeks, about 10 miles, by trail, from Twisp post-office.

Station mark: An aluminum bolt, stamped "U. S. G. S.," set in drill hole in solid rock, surmounted by a small rock monument.

[Latitude 48° 18′ 46.18″. Longitude 120° 11′ 19.79″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Tiffany	205 20 33.59	25 32 01.12	4.6423317
Buck	242 51 10.72	63 07 29.09	4.4804841

CENTRAL CALIFORNIA (SIERRA FOREST RESERVE).

Triangulation Stations.

Three 30-minute quadrangles in the high Sierras were controlled during the summer of 1900 by Mr. E. T. Perkins, jr., topographer, who extended triangulation southward from Mounts Conness, Lyell, Hoffman, and Devil. In addition to reoccupying these, 10 new stations were occupied and numerous prominent peaks located by intersection.

Positions published herewith are based upon the 1901 United States standard datum of the Coast and Geodetic Survey.

CONNESS, MONO COUNTY.

A primary station of the Coast and Geodetic Survey 10 miles north of Soda Springs. In shape, an irregular parallelogram of granite, from northwest portion of which rises the top of peak with precipitous side of 1,000 feet or more. It can be ascended from Soda Springs in four hours by a trail built by the Coast and Geodetic Survey. Grass and water can be found within 1 mile of summit.

Station mark: Concrete pier with five-eighths-inch copper bolt in center.

[Latitude 37° 58′ 02.59″. Longitude 119° 19′ 14.23″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Red	12 36 41.02	192 33 26.59	4.5515767
Clarks Peak	17 29 05.74	197 25 09.01	4.4979644
Devil	37 22 32.54	217 07 08.88	4.7855483
Hoffman	51 21 09.23	231 14 10.79	4.3288340
Cottonwood Peak	83 06 44.80	262 51 29.07	4.5639041
Dana	310 11 57.93	130 15 39.67	4.0621370
Lyell	350 09 07.63	170 10 57.54	4.4088947

DANA, TUOLUMNE COUNTY.

A large, bare, somewhat irregular peak, with cone-shaped top, covered with broken sandstone and granite.

Station mark: Stone monument about 6 feet high.

[Latitude 37° 54′ 00.88″. Longitude 119° 13′ 13.53″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Lyell	14 01 13.38	193 59 22.02	4.2637680
Clarks Peak	39 02 46.85	218 55 09.22	4.4630003
Hoffman	77 04 59.75	256 54 20.18	4.4171931
Conness	130 15 39.67	310 11 57.93	4.0621370

HOFFMAN, TUOLUMNE COUNTY.

About 2 miles west of Lake Tenaya and 39 miles from Sequoia, on the west of Tioga road. The mountain has three sharp ridges of granite and the point occupied is the highest and farthest west. On this ridge is Chimney Rock, a cylinder of granite rising from main ledge to height of 60 feet, and it is north of this that station occupied is situated.

Station mark: A cross cut in rock, over which was erected a monument 5 feet high.

[Latitude 37° 50′ 50.13″. Longitude 119° 30′ 35.94″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Devil	29 59 03.70	209 50 37.68	4.6092431
Pilot	76 06 02.86	255 50 24.41	4.5866541
Cottonwood	114 13 51.81	294 05 35.56	4.3353253
Conness	231 14 10.79	51 21 09.23	4.3288340
Dana	256 54 20.18	77 04 59.75	4.4171931
Lyell	299 28 12.89	119 37 00.01	4.3836744
Clarks Peak	336 34 41.61	156 37 42.36	4.2597926
Red	337 23 09.91	157 26 52.71	4.2654986

DEVIL, MARIPOSA COUNTY.

At the southeast end of short, sharp ridge, 9 miles southwest of Wawona Park, bare on top and covered with loose rock. Ascended by wagon road from Wawona. Nearest camping place is 1¼ miles northeast of summit.

Station mark: A cairn of stones, 4 feet base, 4½ feet high, on site of old monument, 5.6 feet west of "U. S. G. S." chiseled on rock.

[Latitude 37° 31′ 46.80″. Longitude 119° 44′ 23.06″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Pilot	146 23 49.18	326 16 39.63	4.4928478
Cottonwood	180 37 19.76	00 37 31.81	4.6445464
Hoffman	209 50 37.68	29 59 03.70	4.6092431
Conness	217 07 08.88	37 22 32.54	4.7855484
Clarks Peak	235 55 55.04	56 07 20.30	4.5212361
Red	244 35 09.78	61 47 16.70	4.5097490
Kaiser	297 47 02.53	118 07 16.04	4.7451616
Big Shuteye	305 41 47.10	125 53 10.71	4.5325137

LYELL, MONO COUNTY.

Situated 14 miles southeast of Soda Springs, at end of Tuolomne Meadows. In shape very irregular. The south side is a nearly perpendicular wall, the north a series of meadows until the glacier is reached; the east and west sides are rather steep. The highest point is a short, sharp ridge, about 200 yards long, running northwest and southeast, the northwest end being lower. Ascended from head of Lyell Fork and northeast side of peak.

Station mark: Small stone monument; "U. S. G. S." chiseled on rock east of it.

[Latitude 37° 44′ 23.22″. Longitude 119° 16′ 15.15″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Big Shuteye	17 46 48.27	197 41 04.96	4.6571504
Red	52 03 35.82	231 58 32.37	4.1882294
Clarks Peak	71 03 13.41	250 57 27.71	4.1654618
Hoffman	119 37 00.01	299 28 12.89	4.3836744
Conness	170 10 57.54	350 09 07.63	4.4088947
Dana	193 59 22.02	14 01 13.38	4.2637680
Silver	323 29 17.71	143 38 27.25	4.5704983
Kaiser	351 13 21.55	171 16 30.07	4.6987072

RED, MADERA COUNTY.

Ascended from camp at large meadows south of Merced Peak, on trail from Wawona to Soda Springs (or "77" corral), five hours by trail. Could camp much nearer at head of Illilouette River and climb the mountain in three hours. Approached mountain from west, apparently the best way. Can take mules to within 2,000 feet of top.

Station mark: A bronze triangulation tablet set between two large rocks, over which is erected a cairn of rocks 5 feet at base, 7 feet high.

[Latitude 37° 39′ 15.31.″ Longitude 119° 24′ 31.41″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Big Shuteye	2 48 05.05	182 47 24.19	4.5289143
Devil	64 47 16.70	244 35 09.78	4.5097490
Hoffman	157 26 52.71	337 23 09.91	4.3654986
Conness	192 33 26.59	12 36 41.02	4.5515767
Lyell	231 58 32.37	52 03 35.82	4.1882294
Silver	300 40 31.80	120 54 43.33	4.6010921
Kaiser	333 32 06.49	153 40 16.75	4.6487389

BIG SHUTEYE, MADERA COUNTY.

On the bare granite summit of Big Shuteye Peak (Chiquito Peak), the highest point on Chiquito Range, at southeast end of the ridge. Follow trail from Jackass Meadows to where it crosses ridge, then turn to south.

Station mark: A bronze triangulation tablet cemented in solid granite, above which is erected a cairn of rocks 4 feet base and 4 feet high.

[Latitude 37° 21′ 00.26″. Longitude 119° 25′ 38.53″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Devil	125 53 10.71	305 41 47.10	4.5325137
Red	182 47 24.19	2 48 05.05	4.5289143
Lyell	197 41 04.96	17 46 48.27	4.6571504
Silver	249 33 51.80	69 48 41.16	4.5842369
Hilgard	268 29 47.16	88 51 40.06	4.7264787
Kaiser	285 51 29.47	106 00 18.72	4.3493243
Three Sisters	305 14 15.24	125 27 35.30	4.6014723

SILVER, FRESNO COUNTY.

On the highest peak between Fish Creek and Mono Creek, at head of Silver Creek. Summit is flat, running north-northeast and south-southwest. Highest point is at southwest end. Can camp at meadows below Margaret Lakes; thence it is three and one-half hours' travel to station. Can take mules within 700 feet of summit on east. There is grass and water for one night within 1,200 feet of summit.

Station mark: A bronze triangulation tablet set in solid rock, on which was erected a cairn of rocks 5 feet base and 5 feet high.

[Latitude 37° 28′ 12.56″. Longitude 119° 01′ 14.54″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Three Sisters	5 29 45.00	185 28 18.92	4.5635462
Kaiser	36 48 49.60	216 42 50.78	4.3855104
Big Shuteye	69 48 41.16	249 33 51.80	4.5842369
Red	120 54 43.33	300 40 31.80	4.6010921
Lyell	143 38 27.25	323 29 17.71	4.5704983
Hilgard	305 02 47.29	125 09 52.52	4.3230108

KAISER, FRESNO COUNTY.

On a bald peak at the head of Kaiser and Pittman creeks. It is easily ascended from south side. There are numerous lakes and small meadows in the neighborhood.

Station mark: A bronze triangulation tablet set in loose earth, there being no solid rock, above which was erected a cairn of rocks 5 feet base and 5 feet high.

[Latitude 37° 17′ 41.24″. Longitude 119° 11′ 05.57″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Big Shuteye	106 00 18.72	285 51 29.47	4.3493243
Red	153 40 16.75	333 32 06.49	4.6487389
Lyell	171 16 30.07	351 13 21.55	4.6987072
Silver	216 42 50.78	36 48 49.60	4.3855104
Hilgard	256 50 47.29	77 03 50.04	4.5135451
Goddard	237 01 21.12	117 18 14.22	4.6669912
Three Sisters	326 51 09.06	146 55 40.62	4.3067670

HILGARD, FRESNO COUNTY.

Ascended peak from camp on Bear Creek; five and one-half hours' travel. Could camp an hour closer by going to summit of ridge between Bear Creek and Mono Creek. This mountain is best approached along the ridge between Bear and Mono creeks, finally dropping down into northeast fork of Bear Creek and climbing peak from east. On summit of this peak are three small high points of rock. The point occupied is the one to north, or center one.

Station mark: A large flat rock, on which is set a bronze triangulation tablet surmounted by a cairn of rocks 3 feet base and 3 feet high.

[Latitude 37° 21′ 40.11″. Longitude 118° 49′ 34.65″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Three Sisters	40 31 08.67	220 22 39.06	4.5049242
Kaiser	77 03 50.04	256 50 47.29	4.5135451
Big Shuteye	88 51 40.06	268 29 47.16	4.7264787
Silver	125 09 52.52	305 02 47.29	4.3230108
Goddard	341 35 56.51	161 39 49.34	4.4786204

THREE SISTERS, FRESNO COUNTY.

On the south end of summit of the Three Sisters. Can be reached by trail between Shaver and Blaney Meadow (or Hot Springs). Leave trail at large meadow between Red Mountain and Potato Hill, traveling southeast. At foot of mountain on northeast side is a small meadow with running water. Animals can be taken nearly to summit from south to southeast.

Station mark: A bronze triangulation tablet set in loose rock, with a cairn of rocks built over it 3 feet at base and 3 feet high.

[Latitude 37° 08′ 30.59″. Longitude 119° 03′ 36.59″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Big Shuteye	125 27 35.30	305 14 15.24	4.6014723
Kaiser	146 55 40.62	326 51 09.06	4.3067670
Silver	185 28 18.92	5 29 45.00	4.5635462
Hilgard	220 22 39.06	40 31 08.67	4.5049242
Goddard	277 50 59.53	98 03 19.88	4.4854257
Silliman	329 28 41.38	149 41 47.00	4.8062703
Big Baldy	342 58 38.44	163 05 03.75	4.7358215

GODDARD, FRESNO COUNTY.

Ascended peak by ridge running from the southwest up from camp on south fork of San Joaquin, at pasture 1½ miles above the camp of the Mount Goddard Copper Mining Company. Can take animals within 1,500 feet of summit. The south end of the mountain was occupied, although the north end is slightly higher. The south end seems to be the recognized summit and is much easier of access.

Station mark: A bronze triangulation tablet set in loose shale rock, over which is erected a cairn of rocks 4 feet base and 4 feet high.

[Latitude 37° 06′ 13.35″. Longitude 118° 43′ 09.82″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Big Baldy	16 54 10.44	196 48 19.23	4.6967440
Three Sisters	98 03 19.88	277 50 59.53	4.4854257
Kaiser	117 18 14.22	297 01 21.12	4.6669912
Hilgard	161 39 49.34	341 35 56.51	4.4786204
Silliman	357 42 48.51	177 43 37.67	4.7076974

SILLIMAN, TULARE COUNTY.

Highest point in group on west end of ridge. Best reached from camp at Wet Meadows; cross low divide east, follow up creek to first lake, then climb on south side of ridge. Can take mules to top of first point; then one and one-half hours' climb to summit. Good camp at Wet Meadows, from which it is four hours' climb to summit.

Station mark: A bronze triangulation tablet set in solid rock, over which is a cairn of rocks 6 feet base and 6 feet high.

[Latitude 36° 38′ 39.71″. Longitude 118° 41′ 47.89″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Big Baldy	100 48 39.50	280 42 01.26	4.2269529
Three Sisters	149 41 47.00	329 28 41.38	4.8062703
Goddard	177 43 37.67	357 42 48.51	4.7076974

SPANISH, FRESNO COUNTY.

Spanish Mountain can be easily ascended either from Statum or Collins Meadows by riding about two hours.

Station mark: A bronze triangulation tablet set in top of granite rock, over which is erected a cairn of rocks 3 feet base and 3 feet high.

[Latitude 36° 54′ 35.21″. Longitude 118° 53′ 27.21″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Three Sisters	149 43 36.33	329 37 29.39	4.4747072
Goddard	215 17 45.76	35 23 57.36	4.4213575

BIG BALDY, TULARE COUNTY.

Ascended from camp at Woodard's cabin by trail. Time of ascension one hour. Top of mountain is a bare ridge about 200 yards long. Tops of trees growing on the side of hill interfere somewhat with view. South end of hill occupied.

Station mark: A bronze triangulation tablet set in solid rock, and a rock cairn erected over it 7 feet base and 10 feet high. A tree about 15 feet high placed in monument.

[Latitude 36° 40′ 21.81″. Longitude 118° 52′ 54.94″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Three Sisters	163 05 03.75	342 58 38.44	4.7358215
Goddard	196 48 19.23	16 54 10.44	4.6987440
Silliman	280 42 01.26	100 48 39.50	4.2269529

SOUTHERN CALIFORNIA.

Triangulation Stations.

Triangulation in southern California was extended northward and westward from Santa Clara and San Fernando stations of the United

States Coast and Geodetic Survey and connected with two other stations of the same organization—Gaviota and Tepusquet—all based on Yolo base data. Nine new primary stations were occupied and 7 secondary points located by intersections, controlling three 30-minute quadrangles between latitudes 34° 30′ and 35° 00′ and longitudes 118° 30′ and 120° 00′.

The field work was done by Mr. C. F. Urquhart, topographer, during portions of May, June, November, and December, 1900.

LIEBRE, LOS ANGELES COUNTY.

On the highest point of a high, round mountain, sometimes known as Sawmill Mountain, near the east end of the Liebre Range. The mountain is covered with brush about 5 feet high. The new road from Elizabeth Lake to Gorman station passes about 4 miles north from the station at a point 9 miles from former. A trail leaves the road about 1 mile west from Joe Kirby's shack and goes south to summit of an open ridge, from which signal can be seen.

Station mark: An oak tree wired up and used as signal.

Reference mark: A copper bolt marked "U. S. G. S." set in solid rock. Azimuth from reference mark to signal tree 13° 42′; distance 6 feet.

[Latitude 34° 40′ 53.35″. Longitude 118° 34′ 38.63″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
San Fernando	3 13 38.57	183 12 49.60	4.5938706
Hines	67 27 48.01	247 10 48.77	4.6952879
Frazier	105 59 53.39	285 46 28.84	4.5723919
Alamo	72 59 13.47	252 49 16.46	4.4457065

SAN FERNANDO, LOS ANGELES COUNTY.

A station of the United States Coast and Geodetic Survey, on the highest or western crest of San Fernando Mountain, about 5 miles from the long tunnel of the Southern Pacific Railroad.

Station mark: A terra-cotta pipe 24 by 4 inches filled with concrete and set in a triangle of concrete.

[Latitude 34° 19′ 41.47″. Longitude 118° 36′ 05.08″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Santa Clara	89 28 35.36	269 13 45.80	4.6056340
Hines	114 50 26.99	294 34 21.17	4.6815183
Frazier	145 43 47.71	325 31 15.76	4.7772296
Liebre	183 12 49.60	3 13 38.57	4.5938706

ALAMO, LOS ANGELES COUNTY.

(Not occupied.)

A high, rocky mountain near the eastern end of the Alamo Range, sometimes known as Bowlder Peak. It can be reached by trail from the Alamo ranch around by Mr. Bailey's ranch, which is about 6 miles south from the road between Elizabeth Lake and Gorman station, at a point 5 miles from the latter.

Station mark: A small tree on highest point of the mountain.

[Latitude 34° 36′ 27.04″. Longitude 118° 52′ 05.92″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Santa Clara	26 38 24.17	206 32 35.20	4.5460392
Frazier	153 16 34.07	333 13 12.39	4.3146687
Liebre	252 49 16.46	72 59 13.47	4.4457065
San Fernando	321 33 54.87	141 42 58.66	4.5967546

FRAZIER, VENTURA COUNTY.

On the highest point of a mountain locally known as Frazier Mountain, in the northeastern corner of Ventura County, about 2 miles from the Los Angeles County line. The wagon road from Gorman station to Bakersfield passes about 4 miles from the station, at a point 4 miles from the former. There is a good trail from Gorman station to Frazier mine, which is near the triangulation station. Another trail from Cuddy's ranch to Frazier mine passes 100 yards north from station.

Station mark: A lone pine tree 100 feet north from the summit of the mountain.

[Latitude 34° 46′ 25.21″. Longitude 118° 58′ 10.93″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Hines	18 24 44.23	198 21 06.61	4.4902268
Reyes	60 50 55.17	240 40 15.20	4.5157054
Pine	103 13 38.72	283 06 51.20	4.2706034
Liebre	285 46 28.84	105 59 53.39	4.5723919
San Fernando	325 31 15.76	145 43 47.71	4.7772296
Alamo	333 13 12.39	153 16 34.07	4.3146687

SANTA CLARA, VENTURA COUNTY.

A station of the United States Coast and Geodetic Survey, on the highest part of the mountain on the south side of Santa Clara River, about 2 miles in an air line from the town of Santa Paula.

Station mark: A terra-cotta pipe 24 by 4 inches filled with concrete and set in a triangle of concrete.

[Latitude 34° 19′ 26.69″. Longitude 119° 02′ 22.57″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Hines	170 44 32.36	350 43 18.21	4.3181190
San Fernando	269 13 45.80	89 28 35.36	4.6056340

HINES, VENTURA COUNTY.

On the highest point of a mountain locally known as Hines Peak, near the source of Santa Paula Creek and on the divide between Santa Paula and Sespe creeks. The point is rather difficult to reach, though there is a trail up Santa Paula Creek to foot of mountain. It may be reached from the Hot Springs on Sespe Creek. The summit is cleared of brush.

Station mark: A bunch of brush about 7 feet high wired together and used as a signal.

Reference mark: A copper bolt marked “$\overset{\text{U.}}{\text{G.}} \triangle \overset{\text{S.}}{\text{S.}}$” set in solid rock 8.33 feet southwest from signal and station mark.

[Latitude 34° 30′ 33.01″. Longitude 119° 04′ 33.77″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Reyes	125 15 00.85	305 08 00.24	4.3640299
Pine	165 55 35.48	345 52 27.04	4.5394977
Frazier	198 21 06.61	18 24 44.23	4.4902268
Liebre	247 10 48.77	67 27 48.01	4.6952879
San Fernando	294 34 21.17	114 50 26.99	4.6815183
Santa Clara	350 43 18.21	170 44 32.36	4.3181190

PINE, VENTURA COUNTY.

On the highest point on western end of Pine Mountain, more generally known as San Amedia Mountain, which is the highest point in the county. There is an old signal, used by the Wheeler survey, on the east end of mountain about 1 mile from the station. There is a good trail from Mr. Cuddy's ranch to summit.

Station mark: A copper bolt marked “$\overset{\text{U.}}{\text{G.}} \triangle \overset{\text{S.}}{\text{S.}}$” set in loose rock, above which is a flat rock marked “$\overset{\text{U.}}{\text{G.}} + \overset{\text{S.}}{\text{S.}}$”

[Latitude 34° 48′ 43.09″. Longitude 119° 10′ 05.12″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Reyes	27 16 08.13	207 12 14.63	4.3577728
Santa Ynez	67 04 40.56	246 37 00.23	4.9075345
San Rafael	79 18 24.52	258 56 17.86	4.7800219
McPherson	98 13 30.47	277 51 22.50	4.7754341
Frazier	283 06 51.20	103 13 38.72	4.2706034
Hines	345 52 27.04	165 55 35.48	4.5394977

REYES, VENTURA COUNTY.

On the highest point of the divide between Sespe Creek and Cuyama River, about 8 miles northwest from Rafael Reyes's residence. A wagon road down Cuyama River goes to Mr. Reyes's residence, thence go by good trail to station. Another hill 100 yards north has timber on it and a line was cut through it in line with Pine station.

Station mark: A lone fir tree used as a signal.

Reference mark: A copper bolt marked “$\overset{\text{U.}}{\text{G.}}\triangle\overset{\text{S.}}{\text{S.}}$” set in a large rock 4.5 feet south from signal tree.

[Latitude 34° 37′ 45.47″. Longitude 119° 16′ 55.01″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Santa Ynez	79 59 25.73	259 35 41.90	4.8127423
San Rafael	100 28 41.94	280 10 31.52	4.6955497
McPherson	120 35 27.28	300 17 16.07	4.7517482
Pine	207 12 14.63	27 16 08.13	4.3577728
Frazier	240 40 15.20	60 50 55.17	4.5157054
Hines	305 08 00.24	125 15 00.85	4.3640299

MONTECITO, SANTA BARBARA COUNTY.

(Not occupied.)

The highest point in range of mountains, about 15 miles northeast from Santa Barbara and 12 miles west from Nordoff.

Station mark: A small tree on summit of mountain.

[Latitude 34° 32′ 16.09″. Longitude 119° 28′ 02.44″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Santa Ynez	88 28 44.70	268 11 26.42	4.6719106
Pine	221 57 31.18	42 07 44.09	4.6122972
Reyes	239 07 20.27	59 13 39.08	4.2968168

CUYAMA, VENTURA COUNTY.

(Not occupied.)

A prominent mountain on the south side of the Cuyama River, about 10 miles below Rafael Reyes's ranch.

Station mark: Highest point of mountain.

[Latitude 34° 45′ 09.39″. Longitude 119° 28′ 33.68″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
McPherson	115 53 33.34	295 42 03.73	4.5352838
Pine	256 45 41.17	76 56 13.56	4.4615707
Reyes	307 30 51.89	127 37 29.51	4.3509242

CALIENTE, SANTA BARBARA COUNTY.

(Not occupied.)

About 8 miles northwest from the Cuyama ranch, on the highest point of the white, barren mountains, on the north side of the Cuyama River.

Station mark: Highest point of mountain.

[Latitude 35° 02′ 05.42″. Longitude 119° 45′ 38.11″.]

To station—	Azimuth.	Back azimuth.	Log distance.
	° ′ ″	° ′ ″	*Meters.*
McPherson	16 29 20.48	196 27 31.05	4.2326250
Pine	294 22 31.13	114 42 52.23	4.7746474
Reyes	315 38 33.94	135 54 53.05	4.7977730

M'PHERSON, SANTA BARBARA COUNTY.

About 14 miles from the Cuyama ranch, on a high round mountain covered with brush about 4 feet high. A road goes from this ranch to Bart McPherson's house, from which there is a trail to foot of mountain. A long ridge leads to summit, which may be ascended on horseback. Station called "Peak," distant 2¾ miles a little north of east, is about 50 feet higher.

Station mark: The oak signal tree.

Reference mark: A copper bolt marked "$\overset{\text{U.}}{\text{G.}} \triangle \overset{\text{S.}}{\text{S.}}$" set in loose rock, with a rock marked "U. + S." placed over it. Azimuth from signal tree to reference mark 286° 41′; distance 9.5 feet.

[Latitude 34° 53′ 13.75″. Longitude 119° 48′ 49.08″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
San Rafael	0 12 48.02	180 12 46.38	4.2947312
Santa Ynez	20 43 12.35	200 37 33.66	4.6322557
Tepusquet	94 05 47.00	273 52 58.05	4.5341310
Pine	277 51 22.50	98 13 30.47	4.7754341
Reyes	300 17 16.07	120 35 27.28	4.7517482

SAN RAFAEL, SANTA BARBARA COUNTY.

On the northernmost of two rather flat mountains, the highest of the San Rafael Range. The point is rather difficult to reach. The best route is probably up Santa Cruz Creek from Santa Ynez Valley.

Station mark: A bronze triangulation tablet set in loose rock with a rock marked “U. S. ▲ G. S.” above it, surmounted by a rock monument 7 feet high.

[Latitude 34° 42′ 34.06″. Longitude 119° 48′ 51.97″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Santa Ynez	36 30 39.52	216 25 03.23	4.4044042
Tepusquet	123 03 08.37	302 50 22.77	4.6087544
McPherson	180 12 46.38	0 12 48.02	4.2947312
Pine	258 56 17.86	79 18 24.52	4.7800219
Reyes	280 10 31.52	100 28 41.94	4.6955497

M'KINLEY, SANTA BARBARA COUNTY.

(Not occupied.)

A sharp, rocky peak, sometimes called McKinley Mountain. It can be reached from Los Olivos, from which point it shows as the highest point of the San Rafael Mountains.

Station mark: Highest point of mountain.

[Latitude 34° 42′ 03.28″. Longitude 119° 50′ 44.58″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Santa Ynez	32 09 03.51	212 04 27.73	4.3612394
Gaviota	55 37 39.82	235 25 34.91	4.5946496
Tepusquet	126 31 04.31	306 19 23.07	4.5889200
McPherson	188 04 46.00	8 05 51.91	4.3194832

PEAK, SANTA BARBARA COUNTY.

(Not occupied.)

This point is 2¾ miles a little north of west of primary station McPherson, and is the highest point on the range. It can be reached by traveling up the ridge westward from McPherson.

Station mark: Highest point of mountain.

[Latitude 34° 54′ 02.22″. Longitude 119° 51′ 33.00″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Santa Ynez	14 48 03.03	194 43 56.49	4.6337473
Tepusquet	91 47 18.72	271 36 03.44	4.4767463
McPherson	289 46 42.42	109 48 14.50	3.6458659
San Rafael	349 03 42.49	169 05 14.41	4.3343919

SANTA YNEZ, SANTA BARBARA COUNTY.

On the highest point of the Santa Ynez Range. It can be reached from the Santa Ynez Valley or the coast via new road from Los Olivos to Santa Barbara. From the valley on north side of mountains, go from Los Olivos or Santa Ynez to Mahoney's ranch, thence by road to the top of divide, thence east along the ridge 5 miles to station.

Station mark: A rock 2 by 4 feet, found in place, with a hole 2½ inches deep drilled in it.

[Latitude 34° 31′ 31.79″. Longitude 119° 58′ 43.93″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Gaviota	82 11 19.18	262 03 49.90	4.3100387
Tepusquet	155 53 58.83	335 46 52.14	4.6681901
McPherson	200 37 33.66	20 43 12.35	4.6322557
San Rafael	216 25 03.23	36 30 39.52	4.4044042
Pine	246 37 00.23	67 04 40.56	4.9075345
Reyes	259 35 41.90	79 59 25.73	4.8127423

ZACA, SANTA BARBARA COUNTY.

(Not occupied.)

A point locally well known as Zaca Peak, about 10 miles east of north from Los Olivos.

Station mark: A small tree on summit.

[Latitude 34° 45′ 58.94″. Longitude 120° 01′ 26.79″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Tepusquet	136 40 59.81	316 35 23.85	4.3364840
McPherson	235 06 26.76	55 13 39.49	4.3702877
San Rafael	288 08 24.34	108 15 34.46	4.3056366
Santa Ynez	351 09 07.80	171 10 41.27	4.4320598

TEPUSQUET, SANTA BARBARA COUNTY.

A station of the United States Coast and Geodetic Survey on the highest peak of the Tepusquet Range. It can be reached from Goodchild's ranch in the Conyado Valley.

Station mark: A hole drilled in solid rock.

[Latitude 34° 54′ 30.98″. Longitude 120° 11′ 13.14.″]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Gaviota	1 24 42.75	181 24 17.54	4.6561948
Gaviota (by C. & G. S.)	1 24 39.76	181 24 14.86	4.6561948
McPherson	273 52 58.05	94 05 47.00	4.5341310
San Rafael	302 50 22.77	123 03 08.37	4.6087544
Santa Ynez	335 46 52.14	155 53 58.83	4.6681901

GAVIOTA, SANTA BARBARA COUNTY.

A station of the United States Coast and Geodetic Survey on one of the highest peaks to the eastward of Gaviota Pass. The peak is best reached through the canyon extending toward the eastward from the pass at a distance of about 1 mile from the wharf. The highest peaks in the vicinity (between 150 and 300 feet higher) are situated 1½ miles to the eastward.

Station mark: A copper bolt set in concrete, above which a hollow cement pier is erected.

[Latitude 34° 30′ 01.01″. Longitude 120° 11′ 56.89″.]

(By Coast and Geodetic Survey, Yolo base data. Latitude 34° 30′ 00.83″. Longitude 120° 11′ 56.89.″)

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Tepusquet	181 24 17.54	1 24 42.45	4.6561948
Tepusquet (by Coast and Geodetic Survey)	181 24 14.86	1 24 39.76	4.6561948
Santa Ynez	262 03 49.90	82 11 19.18	4.3100387

ALASKA (NOME DISTRICT).

Triangulation Stations.

The following geographic positions are dependent on the positions of Grave and Round triangulation stations, as furnished by the United States Coast and Geodetic Survey.

The field work was done by Mr. R. B. Robertson, with a Saegmuller 4-inch vernier theodolite reading to 30″, under the direction of Mr. E. C. Barnard, topographer.

Average closure error of triangles, 11″.

ROCKY.

On highest point of a rocky peak about 7 miles N. 73° W. from Chinik. There is no trail to station, but it can be reached by going in a straight line from Chinik. There is good grass and water on west side about 1½ miles distant.

Station mark: + cut in solid rock, over which is a small pile of rock.

[Latitude 64° 34′ 24.84″. Longitude 162° 48′ 10.84″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Round	12 46 14.4	192 43 22.4	4.06137
Town	73 43 30.5	253 31 42.9	4.03657
Lime	121 47 26.3	301 16 49.3	4.50053
Grave	45 35 47.9	225 28 55.6	4.17143

ROUND.

A station of the Coast and Geodetic Survey on a rounded point, about 1 mile north of the island on which the astronomic station was situated. It is about 1,000 feet from the edge of the bluff.

Station mark: A cross cut in the center of top of a rock flush with surface of ground.

[Latitude 64° 28′ 22.10″. Longitude 162° 51′ 21.38″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Boot	86 39 02.9	266 22 28.0	4.16917
Grave	95 58 35.1	275 49 30.9	3.90852
Town	135 58 30.9	315 49 35.6	4.05584
Rocky	192 43 22.4	12 46 14.4	4.06137

NATURAL ROCK.

(Not occupied.)

A prominent rock on ridge between Golofnin Bay and Quinnehuk River.

[Latitude 64° 45′ 25.75″. Longitude 162° 51′ 40.00″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Town	18 01 39	197 53 00	4.39338
Rocky	352 15 06	172 18 15	4.31504

TOWN.

On sand spit at entrance to inner Golofnin Bay.

Station mark: Cross cut on large stone flush with surface of ground.

[Latitude 64° 32′ 45.81″. Longitude 163° 01′ 14.42″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Grave	1 02 53.9	181 02 44.8	3.86542
Boot	36 56 29.9	216 48 50.0	4.05432
Lime	139 56 55.1	319 38 06.5	4.40989
Rocky	253 31 42.9	73 43 30.5	4.03657
Round	315 49 35.6	135 58 30.9	4.05584

GRAVE.

A station of the Coast and Geodetic Survey on a high, grassy point about 300 meters from the end of a rocky point on the west side of the bay (Golofnin). There are several Eskimo graves near by.

Station mark: A cross cut in center of top of a large stone set flush with surface of ground.

[Latitude 64° 28′ 48.99″. Longitude 163° 01′ 24.47″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Town	181 02 44.8	1 02 53.9	3.86542
Rocky	225 23 55.6	45 35 47.9	4.17143
Round	275 49 30.9	95 58 35.1	3.90852

BOOT.

On highest part of ridge, about 7 miles S. 37° W. from Chinik. This ridge forms a narrow neck of land between Bering Sea and Golofnin Sound. It can be easily reached from any side on foot or with animals. There is plenty of water and some wood on the Golofnin side, and probably on other sides. There is a natural pile of rock about 100 yards east of station. This is also a triangulation station of the United States Coast and Geodetic Survey.

Station mark: A rock monument.

[Latitude 64° 27′ 53.11″. Longitude 163° 09′ 43.96″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Monument	124 07 51.5	303 39 15.6	4.48456
Lime	161 10 15.9	340 59 08.1	4.48186
Town	216 48 50.0	36 56 29.9	4.05432
Round	266 22 28.0	86 39 02.9	4.16917

LIME.

On a white hill about 3½ miles N. 13° E. of a white hill near Fish River, known as White Mountain, and about the same distance from the town of White Mountain. The station is on the third white hill, counting from White Mountain north. There is little choice of a route to the station from White Mountain, but it is probably best to go via White Mountain and thence from one white hill to the other until station is reached. Wood and water are in abundance about one-half mile east of station.

Station mark: "U. + S." on rock, over which is a spruce tree about 15 feet high.

[Latitude 64° 43′ 19.55″. Longitude 163° 22′ 03.26″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Monument	52 59 57.6	232 42 27.9	4.28622
Solomon	80 25 55.1	259 46 11.9	4.55163
Council	123 11 55.0	302 49 05.0	4.37768
Rocky	301 16 49.3	121 47 26.3	4.50053
Boot	340 59 08.1	161 10 15.9	4.48186
Town	319 38 06.5	139 56 55.1	4.45989

WHITE MOUNTAIN.

(Not occupied.)

A low limestone hill about 200 feet above sea level on north bank of Fish River, one-fourth mile below town of White Mountain.

[Latitude 64° 40′ 41.11″. Longitude 163° 23′ 25.04″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Town	309 35 47	129 55 49	4.36198
Boot	335 12 39	155 25 01	4.41790

MONUMENT.

On highest point of ridge which runs north and east from Bluff City (Topkok), and about 4 miles N. 34° E. therefrom. A trail runs close to signal, coming from the south. It is easily accessible from Bluff City. There is good grass in the draws and water about 2 miles north of station.

Station mark: A rock monument about 9 feet high.

[Latitude 64° 37′ 02.65″. Longitude 163° 41′ 24.56″.]

To station—	Azimuth.	Back azimuth.	Log distance.
	° ′ ″	° ′ ″	*Meters.*
Solomon	105 53 38.2	285 31 15.7	4.31164
Council	169 19 18.2	349 13 54.1	4.39978
Lime	232 42 27.9	52 59 57.6	4.28622
Boot	303 39 15.6	124 07 51.5	4.48456

CHOWIK.

(Not occupied.)

A sharp peak about 3,500 feet above sea level, at head of Neukuluk River, Ophir Creek, and Parantulik River.

[Approximate position: Latitude 65° 08′ 34″. Longitude 163° 45′ 30″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Rocky	324 02 16	144 54 08	4.89170
Town	331 54 24	152 34 29	4.87628

COUNCIL.

A round, rocky point about 6 miles S. 42° W. of Council, being the nearest mountain south of Council.

Station mark: A rock marked "U. △ S.," above which is a rock monument 7 feet high, with a pine tree in the top.

[Latitude 64° 50′ 19.20″. Longitude 163° 47′ 17.57″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters*
Solomon	38 13 07.7	217 56 03.3	4.38542
Lime	302 49 05.0	123 11 55.0	4.37768
Monument	349 13 54.1	169 19 13.2	4.39978

TOPKOK.

(Not occupied.)

On promontory by that name—a United States Coast and Geodetic Survey station.

[Latitude 64° 33′ 25.57″. Longitude 163° 57′ 53.22.″]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Solomon	151 46 10	331 38 26	4.14420
Monument	242 48 31	63 03 24	4.16949
Boot	284 35 16	105 18 44	4.60108

SOLOMON.

A high ridge, sometimes called Thomson Mountain, between the Right Branch and Big Hurrah Creek, both tributaries of Solomon River, and about 12 miles northeast of the mouth of Solomon River, but not visible therefrom. Ridge has three round points about the same height, the station being on the one which shows to be in the middle from nearly all directions. The point farthest west has two little natural humps on top. Station can be reached by going up Solomon River about 8 miles and thence across country a little north of east 8 or 9 miles. It is possible that it can be more easily reached from the mouth of Topkok River.

Station mark: "U. △ S." cut on rock in place, over which is a rock monument about 8 feet high.

[Latitude 64° 40′ 01.81″. Longitude 164° 06′ 10.18″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Council	217 56 03.3	38 13 07.7	4.38542
Monument	285 31 15.7	105 53 38.2	4.31164
Topkok	331 38 26.0	151 46 10.0	4.14420
Lime	259 46 11.9	80 25 55.1	4.55163

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